

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2014

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—The subcommittee was unable to hold hearings on nondepartmental witnesses. The statements and letters of those submitting written testimony are as follows:]

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

PREPARED STATEMENT OF THE BOARD OF MISSISSIPPI LEVEE COMMISSIONERS

Mr. Chairman and Members of the Committee: This statement is prepared by Peter Nimrod, Chief Engineer for the Board of Mississippi Levee Commissioners, Greenville, Mississippi, and submitted on behalf of the Board and the citizens of the Mississippi Levee District. The Board of Mississippi Levee Commissioners is comprised of 7 elected commissioners representing the counties of Bolivar, Issaquena, Sharkey, Washington, and parts of Humphreys and Warren counties in the Lower Yazoo Basin in Mississippi. The Board of Mississippi Levee Commissioners is charged with the responsibility of providing protection to the Mississippi Delta from flooding of the Mississippi River and maintaining major drainage outlets for removing the flood waters from the area. These responsibilities are carried out by providing the local sponsor requirements for the Congressionally authorized projects in the Mississippi Levee District. The Mississippi Levee Board and the Mississippi Valley Flood Control Association support an appropriation of \$500 Million for fiscal year 2014 for the Mississippi River & Tributaries Project. This is the minimum amount that we consider necessary to allow for an orderly completion of the remaining work in the Valley and to provide for the operation and maintenance, as required, to prevent further deterioration of the completed flood control and navigation work.

It is apparent that the Administration loses sight of the fact that the Mississippi River & Tributaries Project provides protection to the Lower Mississippi Valley from waters generated across 41 percent of the Continental United States. These waters flow from 31 States and 2 provinces of Canada and must pass through the Lower Mississippi Valley on its way to the Gulf of Mexico. We will remind you that the Mississippi River & Tributaries Project is one of, if not the most cost effective project ever undertaken by the United States Government. The foresight of the Congress in their authorization of the many features of this project is exemplary.

The many projects that are part of the Mississippi River & Tributaries Project not only provide protection from flooding in the area, but the award of construction contracts throughout the Valley provides assistance to the overall economy of this area. The employment of the local workforce and purchases from local vendors by the contractors help stabilize the economy in one of the most impoverished areas of our country.

In 2011 the MR&T Project successfully passed the greatest flood on the Mississippi River. Every feature of the MR&T Project including levees, floodways and

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reservoirs were utilized. Not one acre of land was flooded that was not designed to flood. Not one life was lost. The MR&T system prevented \$234 Billion in damages in 2011 alone. All together since 1928, Congress has invested \$14 Billion in the MR&T Project and it has prevented \$612 Billion in damages! This is a 44:1 benefit to cost ratio. The flow carried by the Mississippi River in 1927 was 66 percent of a Project Design Flood. The flow carried by the Mississippi River in 2011 was 85 percent of a Project Design Flood. There is a larger flood on the horizon. In fact, stages will be 8' higher when we have the Project Design Flood than we just experienced in 2011. The MR&T Project is only 89 percent complete. Congress must be proactive and fully fund the MR&T Project until it is completed. If not, the MR&T Project will not pass the Project Design Flood.

Even though the MR&T Project worked, it suffered a lot of damage and many weaknesses were discovered during the 2011 Epic Flood. The Mississippi Levee Board would like to commend Congress for appropriating \$802 Million for repairing the MR&T System following the historic 2011 Flood. This money will help reset and rebuild the MR&T System so that we can pass the next major flood event. Money spent on the MR&T Project is money well spent that returns much more money in prevented damages.

Thanks to the additional funding provided by the Congress over the last several years over and above the Administration's budget, work on the Mainline Mississippi River Levee Enlargement Project is continuing. Of the original 69 miles of deficient levees in the Mississippi Levee District, 35.4 miles of work have been completed and 7.4 miles are currently under contract. We are requesting more money for construction on the Mainline Mississippi River Levees in the Lower Mississippi Valley Division which will allow the Vicksburg and Memphis districts to keep existing contracts on schedule and award contracts to avoid any future unnecessary delays in completing this vital project.

For the past few years the President's Budget has not included funding for any construction projects within the Yazoo Basin. This action is especially difficult to understand during a time when our Nation needs an economic boost. These are all projects authorized and funded so wisely by the Congress. All of these projects are encompassed in the footprint of the Delta Regional Authority, an area recognized by the Congress as requiring special economic assistance to keep pace with the rest of our great Nation. We can not lose sight of the fact that all of these projects are required to return more than a dollar in benefits for each dollar spent.

The recommended plan for the Yazoo Backwater Project included a pump that will lower the 100-year flood event by 4.5 feet thereby reducing urban and rural structural damages, providing benefits to the remaining agricultural lands, and reducing the frequency and duration of floods. The plan also includes reforestation easements to be purchased on up to 55,600 of existing agricultural land which will provide benefits in every environmental category—wetlands, terrestrial, aquatics, and waterfowl resources as well as vastly improving water quality. This was a model project that should be the standard for future public works projects in the United States. However on August 31, 2008, the Environmental Protection Agency (EPA) used its authority under Section 404(c) of the Clean Water Act (CWA) to veto the Yazoo Backwater Project even though it is exempt by Section 404(r) of the CWA. The Mississippi Levee Board sued EPA in a lawsuit against EPA asking the Federal Court to determine if this project is indeed exempt from an EPA 404(c) veto by the exemption in Section 404(r) of the CWA. The Federal Court has ruled in favor of EPA. Unfortunately this model project is now completely stopped! If the Yazoo Backwater Project were in place in 2008, 2009 and 2011, the \$220 Million dollar project would have prevented \$257.5 Million in damages! Congress promised flood protection for the Mississippi South Delta back in 1941 when the Eudora Floodway was removed from the MR&T Project. Arkansas and Louisiana have both benefitted from this floodway removal while Mississippi continues to be flooded. We urge Congress to take up this backwater flooding problem again and find a solution for the Mississippi South Delta.

We are requesting more money for the Yazoo Backwater less Rocky Bayou Project. This money will be used to start the Environmental Impact Statement for the Yazoo Backwater Levee Enlargement Project. This levee is designed to overtop during a project design flood, but it needs to be raised 5.8' to get to the required elevation. This backwater levee is supposed to overtop when we are within 2' of a Project Design Flood. In 2011 the Mississippi River was 8' below a Project Design Flood and the Yazoo Backwater Levee came within 4" of overtopping. We need this backwater levee raised immediately.

Work on the Big Sunflower (Upper Steele Bayou) Project has proved to be very beneficial. The Steele Bayou Sedimentation Reduction Project has installed drop-pipe structures at headcut locations all along Steele Bayou. These control structures

stop the movement of sediment into Steele Bayou. Sediment is bad for flood control and water quality. We are requesting more money to keep this project moving forward.

Work on the Delta Headwaters Project has proven effective in reducing sediments to downstream channels. To discontinue this project will only diminish water quality by increasing sediment, reducing the level of flood protection to the citizens of the Delta and increasing required maintenance. We are requesting more money to continue this project.

Maintenance of completed works can not be overlooked. The four flood control reservoirs overlooking the Delta have been in place for 50 years and have functioned as designed. Required maintenance must be performed to avoid any possibility of failure during a flood event. We are asking for more money for Arkabutla Lake, Enid Lake, Grenada Lake, and Sardis Lake.

We are requesting more money for Maintenance of the Mainline Mississippi River Levees in the Lower Mississippi Valley Division which will provide for repair of levee slides, slope repair, and repair of the gravel maintenance roadway which is so vital to access during high water.

The Mississippi River and our Ports and Harbors need money for maintenance dredging. The Mississippi River carries tons of sediment every second. This sediment falls out in slack water areas such as entrances to our Ports and Harbors. The Greenville Port and Vicksburg Port both need more money to perform annual maintenance dredging. This dredging is vital to keep these ports open during the low-water season when much of the farm harvest is ready to be transported.

The Environmental Protection Agency (EPA) has been given too much power under Section 404(c) of the Clean Water Act (CWA) which allows EPA to veto Congressionally authorized projects. During the early 1990's, due to abuse of the 404(c) power by EPA, Congress considered removing this authority from EPA. EPA has again invoked this veto power on the Yazoo Backwater Project. EPA is saying that you can't lower the water level with a flood control project! By killing this project with 404(c) veto authority, EPA is drawing a line in the sand over the future of flood control in our great Nation. EPA has vetoed the Yazoo Backwater Project even though it was approved, authorized and funded by Congress and exempt from a 404(c) veto by 404(r). It is now time to again take up this issue and remove the 404(c) veto power from EPA before they kill another flood control project that has been authorized by Congress.

The Council of Environmental Quality (CEQ) draft proposal of changes to the Principles and Guidelines (P&G) for Federal Agencies fails to establish a clear, concise, and workable framework to guide development of water resources projects. It elevates environment considerations over economic benefits, social well-being and public safety. Because of these critical and extensive failings, we recommend that this effort be put aside and restarted from the beginning. Unfortunately the Administration secretly reconvened the Water Resources Council on March 18th without notice to approve the final Principles, Guidelines & Requirements. We are asking Congress to add language in the Continuing Resolution or Conference Report that directs the Corps to utilize the previous P&G for project development criteria.

As members of the Congress representing the citizens of our Nation who live with the Mississippi River everyday, you clearly understand both the benefits provided by this resource and the destructive force that must be controlled during a flood. On behalf of the Mississippi Levee Board, I can not express enough, our appreciation for your efforts in providing adequate funding over the last several years that has allowed construction to continue on our much needed projects and thank you in advance for your kind consideration of our requests for fiscal year 2014.

PREPARED STATEMENT OF THE BRAZOS RIVER HARBOR NAVIGATION DISTRICT

We express full support of the inclusion in the fiscal year 2014 budget for the full capability of the USACE of \$1 Million—PED.

HISTORY AND BACKGROUND

Port Freeport is an autonomous governmental entity authorized by an act of the Texas Legislature in 1925. It is a deep-draft port, located on Texas' central Gulf Coast, approximately 60 miles southwest of Houston, and is an important Brazos River Navigation District component. The port elevation is 3 to 12 feet above sea level. Port Freeport is governed by a board of six commissioners elected by the voters of the Navigation District of Brazoria County, which currently encompasses 85 percent of the county. Port Freeport land and operations currently include 186 acres of developed land and 7,723 acres of undeveloped land, 5 operating berths, a 45'

deep Freeport Harbor Channel and a 70' deep sink hole. Future expansion includes building a 1,300-acre multi-modal facility, cruise terminal and container terminal. Port Freeport is conveniently accessible by rail, waterway and highway routes. There is direct access to the Gulf Intracoastal Waterway, Brazos River Diversion Channel, and, State Highways 36 and 288. Located just three miles from deep water, Port Freeport is one of the most accessible ports on the Gulf Coast.

PROJECT DESCRIPTION

The fiscal year 2002 Energy and Water Appropriations signed into law included a \$100,000 appropriation to allow the United States Army Corps of Engineers (USACE) to conduct a reconnaissance study to determine the Federal interest in an improvement project for Freeport Harbor, Texas. The USACE, in cooperation with the Brazos River Harbor Navigation District as the local sponsor, has completed that study. The report indicates that "transportation savings in the form of National Economic Development Benefits (NED) appear to substantially exceed the cost of project implementation", thus confirming "a strong Federal interest in conducting the feasibility study of navigation improvements at Freeport Harbor". Congress has to date appropriated full funding for recon and feasibility to completion. The Chief's Report was completed in January 2013 and is currently under review by OMB.

Port Freeport has the opportunity to solidify significant new business for Texas with this improvement project. In addition, the improvement to the environment by taking a huge number of trucks off of the road, transporting goods more economically and environmentally sensitive by waterborne commerce is infinitely important to the community, the State, and the Nation. Moreover, the enhanced safety of a wider channel cannot be overstated. The emergence of an LNG facility at Port Freeport—a joint venture of Conoco-Philips and Cheniere Energy further solidifies the importance of keeping this critical waterway at optimum depth and width.

ECONOMIC IMPACT OF PORT FREEPORT

Port Freeport is 16th in foreign tonnage in the United States. It is responsible for augmenting the Nation's economy by generating over 66,680 jobs in Texas, over 13,300 direct. It also augments the economy by providing annual, State, and local taxes of over \$487,000. Its chief import commodities are bananas, fresh fruit and aggregate while top export commodities are rice and chemicals. The port's growth has been staggering in the past decade, becoming one of the fastest growing ports on the Gulf Coast. Port Freeport's economic impact and its future growth is justification for its budding partnership with the Federal Government in this critical improvement project.

Examples of existing tenants at the Port include:

Dole Fresh Fruit.—Dole has a weekly sailing arriving at Port Freeport with green fruit and other exotic fruits, mainly from Guatemala and Honduras. Dole has been a tenant of Port Freeport for the past 29 years, occupying lease sites comprising of 15 acres. There are approximately 450 jobs associated with this operation.

Chiquita Fresh North America.—Chiquita is very similar to the Dole operation. Chiquita also has a weekly sailing and has been a tenant of Port Freeport for the past 17 years. There are about 400 jobs associated with this operation.

Turbana Banana & Isabella Shipping.—Turbana and Isabella, divisions of Unibar, based in Colombia import 4,500 pallet loads of green fruit and other exotic fruits into Port Freeport weekly. The fruit is processed in a chiller, which the Port undertook and built 8 years ago at a cost of \$7 million dollars. In addition to their import activities, they also export general cargo back weekly to ports in Costa Rica and Colombia. Since moving to Freeport 2 years ago, Turbana has increased their business 38 percent. This highly labor-intensive company accounts for 500 + jobs. Turbana and Isabella recently announced a significant expansion of their Freeport operations that will double their cargo throughput within the next 4 months.

American Rice Inc..—As a 27-year tenant of the Port, this company has the largest rice milling operation in the United States located on water. ARI currently processes 250,000 tons of rice annually with a majority shipped by vessel to overseas markets. This tenant produces over 450 jobs.

Parker Cabell Subsea.—A division of Parker Hannifin Industries is a manufacturer of fiber optic cable used in the offshore exploration industry. Very large cable laying vessels receive miles of continuous cable from this facility on a regular basis. At full production, this operation generates about 150 jobs.

Freeport LNG/ConocoPhillips.—Port Freeport was successful 9 years ago in attracting Freeport LNG to a site on Quintana Island, owned by the Port. This facility, the first new liquefied natural gas plant to be built in the United States in the last 25 years, began operations in the first quarter of 2008. The terminal currently

has full time employment of 50–60 people and operates 24 hours a day, 7 days per week. The current investment in the facility is \$1 Billion. Freeport LNG recently announced a second project that involves the export of gas and has leased another 170 acres from the port. With shale gas exports on the horizon, this facility could add another \$8 Billion in new investments and more new jobs to our area.

In addition to the Port tenants listed above there are numerous U.S. and international chemical and crude processing facilities in the immediate area. Some of the larger international corporations utilizing the Freeport ship channel are as follows:

Dow Chemical.—A diversified chemical company that offers a broad range of products and services to customers in more than 175 countries, helping them to provide everything from fresh water, food and pharmaceuticals to paints, packaging and personal care products. Dow has annual sales of \$54 Billion dollars and employs 43,000 people worldwide, with 4,500 full time employees in the Texas operations and another 2000 contract employees. Texas Operations in Freeport is Dow's largest integrated site where 44 percent of Dow's products are sold in the United States and more than 21 percent of Dow's products sold globally are manufactured. Dow's Freeport Marine Terminal and Operations (FMTO) uses the Freeport Harbor channel and handles the movement of 100 different Dow products at 15 billion pounds annually. Marine vessels transport 46 percent of Dow's volume through Dow docks on the Freeport channel.

Recent Port improvements include the Velasco Terminal, which was launched October 2007 as our first major container terminal. This facility, presently under construction will boast a berthing line of 2,400 linear feet with 90 acres of backland for development. Phase I of the construction, the first 800 ft. of berth and 20 acres of backland will be completed at a cost of approximately \$60 Million. The facility is designed to handle as many as 800,000 twenty foot containers.

DEFENSE SUPPORT OF OUR NATION

Port Freeport is a strategic port in times of National Defense of our Nation. It houses a critically important petroleum oil reserve—Bryan Mound. Its close proximity to State Highways 36 and 288 make it a convenient deployment port for Fort Hood. In these unusual times, it is important to note the importance of our ports in the defense of our Nation and to address the need to keep our Federal waterways open to deep-draft navigation.

COMMUNITY AND INDUSTRY SUPPORT

This proposed improvement project has wide community and industry support. The safer transit and volume increase capability is an appealing and exciting prospect for the users of Freeport Harbor and Stauffer Channel. The anticipated positive benefit to cost ratio that was indicated from the Corps of Engineers reconnaissance study firmly solidified the Federal interest.

WHAT WE NEED FROM THE SUBCOMMITTEE IN FISCAL YEAR 2014

We respectfully request that the full amount of the Corps capability for PED be secured to keep this important project moving forward. It is in the best interest of the Federal Government to give full support of this project.

PREPARED STATEMENT OF THE IZAAK WALTON LEAGUE OF AMERICA

The Izaak Walton League of America appreciates the opportunity to submit testimony concerning appropriations for fiscal year 2014 for programs under the jurisdiction of the subcommittee. The League is a national, nonprofit organization founded in 1922 with more than 41,000 members and 250 local chapters nationwide. Our members are committed to advancing common sense policies that safeguard wildlife and habitat, support community-based conservation, and address pressing environmental issues. The following pertains to programs administered by the U.S. Army Corps of Engineers.

ARMY CORPS OF ENGINEERS, OPERATIONS AND MAINTENANCE, MISSOURI RIVER

The League urges the subcommittee to appropriate \$70 million in fiscal year 2014, as requested by the Army Corps of Engineers, for the Missouri River Recovery Program. With this funding, the Corps, U.S. Fish and Wildlife Service (FWS), States, and other partners can continue important ecosystem restoration efforts that are producing long-term ecological and economic benefits.

The Missouri River basin encompasses land in 10 States covering one-sixth of the continental United States. The Missouri is one of the most altered ecosystems on

earth. Although recovery and restoration efforts are on-going, they need to continue and expand.

The Corps, FWS, and many State agencies have been restoring habitat for fish and wildlife along the river. This work is critical for the Interior Least Tern and Pallid Sturgeon, listed as endangered, and the Piping Plover, listed as threatened, under the Endangered Species Act. The restoration efforts also benefit many other species of fish and wildlife throughout the region. These habitat restoration projects are working with the river—not against it.

These projects also generate additional economic activity in communities along the river. Anglers, hunters, boaters, birdwatchers, and others have been using these areas proving the old adage “if you build it, they will come.” The Missouri Department of Conservation and the Nebraska Game and Parks Commission found recreational spending provides \$68 million in annual economic impact to communities along the Missouri River from Yankton, South Dakota to St. Louis, Missouri. A South Dakota Game, Fish, and Parks study shows that recreational benefits from angling on the Missouri River account for over \$107 million in annual economic activity in the Dakotas and Montana. These projects are bringing more people to the river throughout the Missouri basin.

In addition to the economic boost from tourism, restoration projects support job creation throughout the entire region. The Corps contracts with local construction companies, creating jobs, and injecting dollars into local economies through purchases of materials, fuel, food and lodging. With the funding requested, the Corps could readily implement more of these important economic and river restoration projects.

Missouri River Ecosystem Restoration Plan.—The League urges the subcommittee not to include any provision in its fiscal year 2014 bill limiting funding for the Missouri River Ecosystem Restoration Plan (MRERP). This long-term ecosystem study will lead to a comprehensive plan that Federal agencies, States, tribes, and communities along the river will be able to implement for a healthier Missouri River. A great deal of time and effort has already gone into development of MRERP. Funding must be allowed for this important effort to get back on track before the information already gathered loses relevance and will cost U.S. taxpayers more to gather again.

Missouri River Authorized Purposes Study.—The League also urges the subcommittee to provide funding to complete the Missouri River Authorized Purposes Study (MRAPS). The League strongly opposed the funding prohibition contained in the Consolidated Appropriations Act of 2012. It does not provide taxpayers with meaningful savings in the near-term and jeopardizes real future savings. Delaying this analysis deprives the country of Missouri River management geared toward future needs rather than those identified during World War II.

MRAPS for the first time will review the eight authorized Missouri River purposes established by the Flood Control Act of 1944. This thorough analysis of the purposes will determine the best management for the American taxpayer, all the residents of the basin, and fish and wildlife, taking in account today's economic values and priorities, rather than those identified nearly 70 years ago.

Full funding of MRAPS is a wise investment. A comprehensive review and accompanying changes will streamline future Corps operational expenses saving tax dollars and bringing Missouri River management into the 21st century. The League strongly believes that the MRAPS process must be allowed to resume in fiscal year 2014.

ARMY CORPS OF ENGINEERS, CONSTRUCTION, UPPER MISSISSIPPI RIVER

The League is an active and long-time proponent of restoring the Upper Mississippi River (UMR) ecosystem. We have supported the Upper Mississippi River Restoration—Environmental Management Program (UMRR-EMP) since its inception and continue to support this vital restoration initiative. We urge the subcommittee to provide \$31.968 million for the UMRR-EMP as requested by the Corps of Engineers.

The League also reiterates our view that the large-scale navigation modifications included in the Recommended Plan for the Upper Mississippi Navigation and Ecosystem Sustainability Program (NESP), as authorized by the Water Resources Development Act of 2007, have not been justified by the Corps and should not be pursued. Previous reviews by the National Academy of Sciences and the Assistant Secretary of the Army, Civil Works found that the navigation construction component of NESP was not economically justifiable. A report released in 2010 by the Nicollet Island Coalition, of which the League is a member, provides additional evidence that proposed locks and dams in this region are not a good investment for American

taxpayers. With this in mind, the League supports the Corps' decision not to request funding for NESP in fiscal year 2014.

The Upper Mississippi River is one of the most complex ecosystems on earth. It provides habitat for 50 species of mammals, 45 species of reptiles and amphibians, 37 species of mussels, and 241 species of fish. The need for ecosystem restoration is unquestionable. As the Corps correctly stated in its study of navigation expansion, this ecosystem is "significantly altered, is currently degraded, and is expected to get worse." Researchers from the National Academy of Sciences have determined that river habitat is disappearing faster than it can be replaced through existing programs such as UMRR-EMP, which was authorized at \$33.2 million annually by Congress in 1999, but has never received full appropriations. As habitat vanishes, scientists warn that many species will decline and some will disappear.

Our Nation relies on a healthy Mississippi River for commerce, recreation, drinking water, food, and power. More than 12 million people annually recreate on and along the Upper Mississippi River spending \$1.2 billion and supporting 18,000 jobs. More people recreate on the Upper Mississippi annually than visit Yellowstone National Park. As recreation and other uses have become more important, barge traffic has remained static on the river for more than two decades.

In assembling the UMR-IWW navigation study, the Corps recognized the critical need for ecosystem restoration and encouraged Congress to invest approximately \$130 million annually in Upper Mississippi River habitat restoration efforts. With this need in mind, the League strongly encourages the subcommittee to prioritize investment in ecosystem restoration by appropriating the full amount requested for the Upper Mississippi River Restoration—Environmental Management Program in fiscal year 2014. Additional funding for restoration will support economic development and job creation in communities along the UMR and provide long-term conservation and economic benefits for the region and the Nation.

CLEAN WATER ACT GUIDANCE AND RULEMAKING

Last year, the American people celebrated the 40th anniversary of passage of the Clean Water Act. With this in mind, the League strongly urges the subcommittee not to include or accept any provision in its fiscal year 2014 bill barring the Army Corps from finalizing and implementing Clean Water Act guidance or proceeding with the formal rulemaking process to revise its clean water regulations. Our organization and hunting, angling and conservation groups across the country actively opposed similar provisions in previous appropriations bills funding the Corps and Environmental Protection Agency (EPA).

Since proposing draft guidance in April 2011, the Army Corps has conducted a nearly unprecedented public engagement process for agency guidance. During this process, the Corps and the Environmental Protection Agency (EPA) held a 90-day public comment period. The agencies received more than 230,000 comments and have publicly stated that 90 percent of individual comments supported the proposal. In mid-February 2012, the Corps and EPA submitted revised guidance to the Office of Management and Budget (OMB) for another round of inter-agency review. This process also allows nongovernmental organizations to meet with OMB to share their perspectives on the policy.

Guidance proposed by the Corps is based on sound science and clearly complies with the Supreme Court decisions in SWANCC and Rapanos. Allowing the Corps to proceed with guidance will partially restore protections for streams flowing to public drinking water supplies for 117 million Americans. It will also begin—but only begin—to restore protections for some wetlands. Healthy wetlands are essential to waterfowl, fish, and other wildlife, provide cost-effective flood protection, and improve water quality. They also support hunting, angling, and wildlife watching, which together inject \$145 billion annually into our economy. Finalizing the guidance will also provide more clarity and certainty about Clean Water Act implementation to landowners, developers, agency personnel, and State and local governments.

Once again, the League urges the subcommittee not to include any provision in its fiscal year 2014 bill limiting the Corps' ability to finalize and implement Clean Water Act guidance or initiate formal rulemaking concerning clean water regulations.

We appreciate the opportunity to submit this testimony.

PREPARED STATEMENT OF THE LITTLE RIVER DRAINAGE DISTRICT

My name is Sam M. Hunter, D.V.M. I am a veterinarian, landowner, and farmer, and I reside in Sikeston, Missouri. I am the President of the Board of Supervisors

of The Little River Drainage District, the largest such entity in the Nation. Our district serves as a drainage outlet and provides flood control to parts of seven counties in southeast Missouri. We also provide flood protection to a sizable portion of northeast Arkansas. Our district is funded solely by the annual assessment of benefits of more than 3,500 landowners. Today, I would like to discuss funding for the U.S. Army Corps of Engineers, more specifically the Mississippi River and Tributaries (MR&T) which is a line item in the Civil Works budget.

This is a reminder to the U.S. Senate Committee on Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on Federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. Because of these facts we respectfully request an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our Nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line item in the budget. To remove it will destroy the continuity of this highly valued and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our Nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our Nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire Nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our Nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great Nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the Nation made to prevent another calamitous natural disaster like the 1927 flood, the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed, despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from April 21–May 3 over a significant portion of six States that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mississippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our Nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our Nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our Government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectfully request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1987, also allow barge traffic and a near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been non-existent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

(a) **SPECIAL FLOOD HAZARD AREAS.**—Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) **RESIDUAL RISK AREAS.**—The regulations required by subsection (a) shall—

(1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) **MANDATORY PARTICIPATION IN NATIONAL FLOOD INSURANCE PROGRAM.**—

(1) **IN GENERAL.**—Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

(2) **LIMITATION.**—The mandatory purchase requirement under paragraph (1) shall have no force or effect until the mapping of *all residual risk areas* in the United States that the Director determines essential in order to administer the National Flood Insurance Program, as required under section 19, are in the maintenance phase.

Thank you for understanding the tremendous negative impact this piece of legislation would have had on the entire Mississippi River Valley. Billions of dollars already spent on flood control structures would be negated because of needless MANDATORY flood insurance premiums. Please remember the 1928 flood control act recognizes the investment of the local people by initial construction and taxation of themselves for maintenance. This investment was over 200 million dollars in 1928 and totals more than 17 billion dollars today, making the total investment in the MR&T over 30 billion dollars. Because of this, it is still necessary to discuss the new policies being implemented by the Federal Emergency Management Agency in their Map Modernization Program.

The policy creates a New Zone "X" (shaded) designated area. This new designation shows all areas behind a levee as an unsafe place to live and recommends, among other things, an evacuation plan and flood insurance.

This designation renders all work done by local and Federal organizations for the last 100 years useless. Even if our levees are Federal Levees and have received an outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. The insurance industry would love nothing more than the ability to collect flood insurance premiums without the possibility of paying claims because of the hard work of the U.S. Army Corps Of Engineers and local levee and drainage districts across this country.

With the tragedy that struck the Gulf Coast and East Coast, we must now turn our attention to the future and attempt to make certain that at least the flooding does not take place again. We can prevent that; the Dutch, the English and the Italians have done it and so can we if we treat flood control as something that we must do. The citizens of this great Nation deserve it.

There are four anomalies of nature that cause death and destruction to our Nation. They are (1) earthquakes, (2) hurricanes, (3) tornadoes and (4) floods. The first three we can do very little if anything about except to prepare for the worst. We

can build protection against floods, against the "maximum probable flood", one that has an "improbable occurrence but nevertheless a remotely possible one".

In order to provide such protection we believe that three things must be done. First, the environmental laws, or at least the way they are interpreted for flood control projects, must be changed or we stand to lose more lives and have another absolute environmental catastrophe such as the one we have witnessed in New Orleans and along the Gulf Coast. Second, cancel all cost-sharing for flood control projects unless we do intend to only protect those that can afford it and ignore those that cannot. Third, relax the requirements for the benefit to cost ratio for flood control projects for one reason, it is impossible to assign a dollar value to a human life. It is our opinion that these things must be done, for without flood control, nothing else really matters. I close with a simple reminder. The MR&T system is not complete and therefore will not pass the Project Design Flood! Thank you for your leadership and the resulting 100's of billions of dollars averted because you supported and funded the greatest civil works project on the planet . . . the MR&T!

I would like to thank each member of the committee, their staff, and the committee staff for taking the time to review the above written testimony. We are appreciative of anything the Energy and Water Development subcommittee can do to improve our livelihoods, and to insure the safety of our communities. Your work is very important to our country and we feel it is important for us to thank you for your service, and for giving us the opportunity to share our testimony.

PREPARED STATEMENT OF THE MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION

This is a reminder to the U.S. Senate Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on Federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. Because of these facts we respectfully request an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our Nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line item in the budget. To remove it will destroy the continuity of this high value and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our Nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our Nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire Nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our Nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great Nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the Nation made to prevent another calamitous natural disaster like the 1927 flood, the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed, despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from

April 21–May 3 over a significant portion of six States that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mississippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our Nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our Nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our Government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectfully request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1937, also allow barge traffic and a near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been non-existent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

(a) **SPECIAL FLOOD HAZARD AREAS.**—Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) **RESIDUAL RISK AREAS.**—The regulations required by subsection (a) shall—

(1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) **MANDATORY PARTICIPATION IN NATIONAL FLOOD INSURANCE PROGRAM.**—

(1) **IN GENERAL.**—Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

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outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. The insurance industry would love nothing more than the ability to collect flood insurance premiums without the possibility of paying claims because of the hard work of the U.S. Army Corps Of Engineers and local levee and drainage districts across this country.

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PREPARED STATEMENT OF THE NATIONAL WILDLIFE FEDERATION

On behalf of the National Wildlife Federation (NWF), the Nation's largest member-based conservation advocacy and education organization, and our more than four million members and supporters, we thank you for the opportunity to provide fiscal year 2014 funding recommendations for the Department of the Energy, the Army Corps of Engineers, and other agencies under the jurisdiction of this subcommittee.

We understand the very difficult budget choices facing the subcommittee and the Nation as we move forward under the constraints of the Budget Control Act of 2011 (Public Law 112-25). That said, it is our belief that disproportionate cuts to conservation programs represent policy positions not consonant with the priorities and values of most Americans. These programs protect cherished lands and waters, conserve the natural resources that are vital to the Nation's continued economic vitality, and decrease the climate-changing carbon pollution that puts all Americans at risk.

National Wildlife Federation is committed to protecting wildlife for our children's future, and we recognize that climate change is the single largest threat facing our wildlife, critical habitats, and public health. Without significant new steps to reduce carbon pollution, our planet will warm by 7 to 11 degrees Fahrenheit by the end of the century, with devastating consequences. For much of America's most valued wildlife, the climate crisis is already here: habitat loss and increases in droughts and wildfires are already having noticeable effects on vulnerable populations of some of America's most iconic species. Reducing carbon pollution by continuing a robust investment in clean energy is critical to transitioning the country to cleaner, more secure sources of energy.

In the wake of Hurricane Sandy and ever-increasing extreme weather events, it is more important than ever to confront climate impacts and preserve our most valuable natural buffers. Wetlands such as the Everglades and Coastal Louisiana are both incredibly biodiverse and ecologically valuable and serve as a critical buffer between coastal economies and the destructive forces of storm-driven waves and tides. NWF supports continued investment in wetlands conservation and restoration to better protect people, property, and the environment.

NWF and its members remain concerned about proposed funding reductions to many of the Federal Government's core commitments and programs for conserving fish and wildlife, sustaining and restoring important ecosystems, and maintaining clean air and water. Perhaps of even greater concern are efforts to rewrite the Nation's landmark environmental laws through the use of policy riders on the appropriations bill. National Wildlife Federation urges the subcommittee to pass a bill free of such riders while making the necessary investments in our essential conservation and environmental programs and commitments in the fiscal year 2014 appropriations bill.

National Wildlife Federation is overall supportive of the President's fiscal year 2014 budget request, which we view as balancing fiscal responsibility with continued investments in essential conservation and environmental programs. Below, we offer recommendations for specific budget items and programs.

I. DEPARTMENT OF ENERGY

Energy Efficiency and Renewable Energy

The Office of Energy Efficiency and Renewable Energy provides critical programs focused on driving clean and renewable energy research, development and demonstration. Advancing solutions that promote cleaner energy sources, jobs, and a safer and more sustainable future for our children is critical to confronting the climate crisis. EERE's work is an essential to reducing our dependence on fossil fuels and shifting toward an energy strategy that considers the protection of wildlife and their habitats. NWF is strongly supportive of the Administration's fiscal year 2014 request of \$2.78 billion for the Office of EERE. The \$995 million increase from fiscal year 2012 aligns with the President's energy goals and reflects the allocation of funding necessary for bringing such important targets to fruition.

The Offshore Wind Demonstration Funding Opportunity recognizes the market barriers to offshore wind production and offers opportunity for leading innovators in this new industry to secure funding and get the first projects in U.S. waters. By continuing this initiative, EERE's wind and water program will be able to award \$20 million to three of the seven competitively selected projects currently in their engineering phases, and support their progress through design, construction, and installation. The 6-year, \$168 million initiative anticipates funding some offshore wind deployment by 2017, allowing America to begin harnessing the potential of this significant untapped resource. The Department of Energy has a decades-long legacy of spurring innovations in wind energy, and today the wind industry employs 85,000 Americans and has large wind power projects in 38 States. Continued investment in this fast-growing industry is both economically viable and environmentally responsible. NWF endorses the Administration's request of \$46 million for offshore wind programs.

II. ARMY CORPS OF ENGINEERS

Comprehensive Everglades Restoration Plan

America's Everglades are one of the most unique and biodiverse ecosystems in the world, designated as Ramsar Wetlands of International Significance. In the 1940s the Army Corps drained the Everglades resulting in substantial wetland and habitat loss. Protection of the remaining ecosystem and restoration of ecological function are critical for water supply, wildlife, water quality, recreation, tourism, and the economy of South Florida. A recent study indicates each dollar invested in restoring the Everglades will result in a four dollar return. Beginning in the 1980s, Congress made and has affirmed its commitment to restoring the historic River of Grass by allowing fresh water to flow southward and later enacting the Comprehensive Everglades Restoration Plan (CERP). This subcommittee has made substantial progress in furthering that promise in recent years by providing support to the US Army Corps of Engineers so it can fulfill the goals of CERP. Sustained funding to keep restoration projects on schedule is critical to avoiding collapse of the ecosystem, economy, and water supply of 7.5 million South Floridians. NWF strongly supports continued support and commitment to Everglades Restoration.

Louisiana Coastal Area, Ecosystem Restoration

The Louisiana coastal plain is the largest expanse of coastal wetlands in the contiguous United States, and is one of the Nation's most productive and valuable natural regions. It is home to an incredible diversity of habitats and wildlife, including endangered and threatened species and economically important finfish and shellfish, and serves as crucial habitat for migratory birds. Coastal wetlands serve as a vital buffer between storm-driven waves and tides and the nearly 2 million people and the critical industries and ports along the Louisiana coast. These invaluable wet-

lands are now losing a football field of land every 38 minutes—a total of 1900 square miles since the 1930s. The Coastal Wetlands Planning, Protection, and Restoration Act, locally referred to as the Breaux Act and passed in 1990, the “Coast 2050: Toward a Sustainable Coastal Louisiana” plan adopted in 1998, and the Louisiana Coastal Area, Louisiana Ecosystem Restoration Study initiated in 2002, are important steps towards stemming this alarming loss, but continued commitment from Congress is needed to ensure that one of our most valuable natural regions does not disappear. It is crucial that we continue to fund the restoration of coastal Louisiana, and NWF strongly supports the President’s new request for \$6,285,000 for Louisiana Coastal Area Ecosystem Restoration.

PREPARED STATEMENT OF PHYLWAY CONSTRUCTION, LLC

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PREPARED STATEMENT OF THE PORT OF HARLINGEN

We express full support of the inclusion in the fiscal year 2014 budget for the full capability of the USACE of \$2 Million—\$O&M.

HISTORY AND BACKGROUND

The Port of Harlingen Authority is a Navigation District of the State of Texas. The Port of Harlingen is located on the Arroyo Colorado River and Farm Road 106, on the eastern city limits of the City of Harlingen. The channel connecting the Arroyo Colorado with the Gulf Intracoastal Waterway was completed and dedicated on February 27, 1952. It is 12 feet deep and 125 feet wide and has a turning basin measuring 400 by 600 feet. By 1962 the port was handling \$2.5 million in commerce. In 1983 commodity shipments amounted to 455,430 short tons, and by 1984 they increased to 801,003 short tons, with the port housing ten industries with commercial leases. In 1989 the Port of Harlingen handled 728,954 short tons of cargo. In 2009 the Port Harlingen handled 882,769 tons of cargo. In 2010 the port handled 972,236 tons of cargo. In 2011 the port handled 1,101,096 tons of cargo. In 2012 the Port of Harlingen handled 997,823 tons of cargo.

The port is located four miles east of the City of Harlingen, Texas on Highway 106. It is 25 miles west of Mile Marker 646 on the Gulf Intracoastal Waterway, which stretches from the Mexican border at Brownsville, Texas, along the entire coast of the Gulf of Mexico to St. Marks, Florida. The Gulf Intracoastal Waterway provides over 1,300 miles of protected waterway. The Harlingen channel is maintained to a width of 125 feet and a depth of 12' feet and is supplied by the Arroyo Colorado, a fresh water river.

PROJECT DESCRIPTION

The project is located in the vicinity of Rio Hondo and the east side of the City of Harlingen in Cameron and Willacy Counties, Texas. The project consists of a channel 25.8 miles long. The channel extends with the main channel of the GIWW through the Arroyo Colorado to the turning basin at Harlingen. It also included a barge-mooring basin near the channel's junction with the GIWW. Authorized channel dimensions are 12' by 125'. 100 percent of all the sugar grown in the entire Rio Grande Valley (RGV) in south Texas is exported exclusively via the Port of Harlingen to a location on the Mississippi River, 95 percent of all commercial fertilizer products needed by all agricultural interests in the entire RGV of south Texas are imported via the Port of Harlingen and 70 percent of all gasoline products for the entire Rio Grande Valley (RGV) of south Texas is shipped through the Port of Harlingen. The Port of Harlingen also handles cement, sand, aggregates, building materials, roadway materials, ethanol, Anhydrous Ammonia, cotton, sorghum and other agricultural products. Maintenance of the project to authorized dimensions is a Federal responsibility. Safe and efficient commercial navigation is of national interest. The inability to maintain the project at authorized depths will cause safety hazards.

and severe economic loss to the agricultural, construction and petrochemical industries in the entire Rio Grande Valley south Texas region.

ECONOMIC IMPACT OF THE PORT OF HARLINGEN

The Port of Harlingen provides efficient and economical transportation to points as close as Corpus Christi and as far as the Great Lakes. Terminals, warehouses, docks and other facilities ease shipments into and out of the Port of Harlingen, and over 150 acres of on-and-off channel sites are available for industrial firms requiring economical transportation and attractive land lease rates. The port is also an important link in the comprehensive transportation network of the Rio Grande Valley of Texas. The Union Pacific Rail Road (UPRR) and Burlington Northern Santa Fe (BNSF) serve the port and keep products moving to Texas locations and throughout the U.S. and Mexico. Additionally, as was stated in the project description above, 100 percent of all the sugar grown in the entire Rio Grande Valley (south Texas) is shipped exclusively via the Port of Harlingen to New Orleans on the Mississippi River, 95 percent of all commercial fertilizer products consumed by the various agricultural interests in the entire RGV are imported via the Port of Harlingen and 70 percent of all gasoline products consumed in the entire RGV for south Texas is shipped through the Port of Harlingen.

COMMUNITY AND INDUSTRY SUPPORT

One industry the Port of Harlingen is involved in is sugar. The Port of Harlingen Authority built a \$3,800,000 dollar sugar transfer warehouse to load barges of sugar for shipment to New Orleans, Louisiana. The Port of Harlingen has shipped as much as 172,000 short tons of sugar to Louisiana in any given year. The RGV Sugar Industry cannot ship raw sugar by rail or truck because it is not cost effective and the finish mills in Louisiana are not capable of receiving raw sugar by rail. Instead the raw sugar is shipped exclusively by barge. To ship the sugar by truck would take over 6,878 truckloads at four times the cost. If this occurs, recent economic studies have determined that it would put the RGV Sugar Industry out of business.

Additional industries and tenants present at the Port are: NuStar Energy, Helena Chemical Company, CEMEX, Crop Production Services, Favelle Favco Cranes, Gavilon Grain, Harlingen Cotton Gin, RGV Gin Company, Rio Grande Valley Sugar Growers Inc., Wilbur Ellis, RGV Sand Pit, RGV Mobile Concrete, Chalico Concrete Materials (CCM) and Earthwise Organics which have facilities at the port or downstream. CEMEX also has a terminal at the port that handles much needed concrete sand shipped from Victoria Texas and Cement shipped in from Mexico.

NuStar Energy Corporation actively receives all three grades of automotive gasoline, ultra-low sulfur diesel and ethanol at the Port of Harlingen by barge. The opportunity to import jet fuel via barge for the three International Airports located in the RGV is currently being explored. Container on barge is another opportunity being examined.

The Port of Harlingen also exports grain, sorghum, ultra-low sulfur diesel and liquid fertilizer to Mexico. The Port of Harlingen also provided all of the roadway building materials and cement used by the wind turbine farm developers in the region resulting in a 300 percent increase in such tonnage in fiscal year 2012.

WHAT WE NEED FROM THE SUBCOMMITTEE IN FISCAL YEAR 2014

Maintenance dredging of this channel is a Federal responsibility. As deliberations on the Energy and Water Subcommittee on Appropriations commence, we would appreciate your help in securing the Corps capability of \$2 Million so that this project can move forward and ensure that the Gulf Intracoastal Waterway—Port of Harlingen receive essential maintenance dredging at the federally authorized depth.

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

Mr. Chairman and members of the Committee, I am Dan York, RRVA President, and pleased to represent the Red River Valley Association, 629 Spring St., Shreveport, Louisiana. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

The resolutions contained herein were adopted by the Association during its 88th Annual Meeting in Shreveport, Louisiana, on February 21, 2013, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to

the goals of the Association. A summary of the civil works projects and requested funding is included in this testimony.

The President's fiscal year 2014 budget included \$4.826 billion for the civil works programs. The Administration fails to recognize the Corps' critical role as stewards of our Nation's water resources, and the vital importance of our water resources infrastructure to our economic and environmental well-being. The problem is also how the Administration distributes funds. A few projects received the full 'Corps Capability' to the detriment of many projects that receive reduced or no funding. This funding level does not come close to the real needs of our Nation. A more realistic funding level to meet the existing needs of the civil works program is \$6 billion for fiscal year 2014. The traditional civil works programs remain at the low, unacceptable level as in past years. These projects are the backbone to our Nation's infrastructure for waterways, flood prevention, water supply, recreation and ecosystem restoration. We remind you that civil works projects are a true 'jobs program' in that up to 85 percent of project construction funding is contracted to the private sector; 100 percent of the construction, as well as much of the architect and engineering work. Not only do these projects provide jobs, but provide economic development opportunities for our communities to grow and prosper, creating permanent jobs. We encourage Congress to increase the 'water' share of the total Energy and Water Bill closer to the \$6 billion Corps capability.

We have great concerns over the issue of 'earmarks'. Civil Works projects are not earmarks! Civil Works projects go through a process; reconnaissance study, feasibility study, benefit to cost ratio test, EIS, peer review, review by agencies, public review and comment, final Chief of Engineer approval, authorization by all of Congress in a WRDA bill and signed by the President. In the opinion of most people at the local level no other Federal program goes through such a rigorous approval process. Each justified project 'stands alone', are proven to be of national interest and should be funded by project. For most projects there is local sponsor cost sharing during the feasibility study, construction and for O&M. Those who have contributed, in most cases—millions of dollars—to the process, must have the ability to have a say for their projects to get funded. That voice is through their Congressional delegation. We believe that earmarks are not in the national interest, but it does not pertain to the civil works program. For civil works it is an issue of priority of projects to be funded and who will determine that, OMB or Congress! We hope Congress takes back their responsibility to set civil works priorities and to determine how its citizens' tax dollars are spent.

I would now like to comment on some of our specific requests for the future economic well being of the citizens residing in the four State Red River Basin regions.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. We are extremely proud of our public ports, municipalities and State agencies that have created this success. This upward 'trend' in usage will continue as new industries commence operations. A major German company, Benteler Steel/Tube, announced it will construct a \$900 million pipe facility at the Caddo-Bossier Port. The facility will have 675 permanent employees. This project is proof of the Waterway growth as is the fact that there are many more industries considering using our Waterway and locating at the public ports.

We have a serious issue with the J. Bennett Johnston Waterway O&M in the President's budget. The Administration allocated \$8,795,000 for fiscal year 2014. With 5 percent sequestration applied, it results in less funding than received in fiscal year 2013. This reduction from the \$10,500,000 required for basic annual O&M needs will directly impact the ability to conduct maintenance dredging and the authorized 9' by 200' channel will not be maintained. If the required funding level of at least \$10.5 million is not appropriated the Waterway may actually shut down to all traffic and industry will see the Waterway as unreliable and choose alternative modes of transportation, impacting ports and jobs.

The Inland Marine Transportation System (IMTS), an internal Corps organization, is implementing a 'lock level of service' mandate. This mandate will determine the hours of operations at each lock based on annual commercial lockages. What is upsetting is that this mandate was devised internal to the Corps of Engineers with no input from industry or local sponsors. This mandate will impact the reliability of waterways creating a downward spiral of users insuring the failure of connecting waterways. The J. Bennett Johnston Waterway was authorized into law and required to operate 24 hours, 7 days a week, 365 days a year, with a 9' by 200' channel. We believe the Federal Government has an obligation to operate and maintain this Waterway as directed by law.

Red River Navigation into SW Arkansas Feasibility Study.—This region of SW Arkansas and NE Texas continues to suffer major unemployment and this navigation project, although not the total solution will help revitalize the economy. Due to the

time lapsed in the study the 'freight rates' calculated a number of years ago must be re-evaluated. To date the local sponsor, Arkansas Red River Commission, has invested over \$4 million, to cost share in this study. Since no funding has been appropriated for this study the Commission has provided \$1 million to the Corps in 'contributed funds' to conduct a full investigation to insure all benefits have been identified. This feasibility study has been ongoing for over 10 years and the Commission is making every effort to bring it to a successful conclusion. The Administration and Congress need to make the Federal contribution and the same commitment the local sponsor and State of Arkansas have made.

Flood Prevention.—What will happen when we ignore our levee systems? We know the Red River levees in Arkansas do not meet Federal standards, which is why we have the authorized project, 'Red River Below Denison Dam, TX, AR & LA'. Now is the time to bring these levees up to standards, before a major flood event.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas. Five of eleven levee sections have been completed and brought to Federal standards. The Red River Levee District (AR) is prepared to provide lands, easements and rights of way for the next major rehabilitation of the Lafayette County levees.

The levees in Louisiana have been incorporated into the Federal system; however, they do not meet current safety standards. These levees do not have a gravel surface roadway, threatening their integrity during times of flooding. It is essential for personnel to traverse the levees during a flood to inspect them for problems. Without the gravel surface the vehicles will cause rutting, which can create conditions for the levees to fail. A gravel surface will insure inspection personnel can check the levees during the saturated conditions of a flood.

Bank Stabilization.—One of the most important, continuing programs, on the Red River is bank stabilization in SW Arkansas and North Louisiana under the authorized project—Red River Emergency Bank Protection. We must stop the loss of valuable farmland that erodes down the river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as levees, roads, electric power lines and bridges, as well as increased dredging cost in the navigable waterway in Louisiana. These bank stabilization projects are compatible with subsequent navigation into Arkansas and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of highest priority.

Water Quality.—The Assistant Secretary of the Army (Civil Works), in October 1998, agreed to support a re-evaluation of the Wichita River Basin tributary of the Chloride Control Project. The re-evaluation report was completed and the Director of Civil Works signed the Environmental Record of Decision. The plan was found to be economically justified. Then the ASA (CW) directed that construction would not proceed until a local sponsor was found to assume 100 percent of the O&M for the project. The 2007 WRDA Bill included language that clarified that all aspects of this project will be at full Federal expense, to include O&M. Over the past years there has been a renewed interest by the Lugart-Altus Irrigation District to evaluate construction of Area VI, of the Chloride Control Project, in Oklahoma. They have obtained the support of many State and Federal legislators, as well as the Oklahoma Governor in support of a re-evaluation report.

A private company, Good Earth Mechanics (GEM) has proposed a private venture to install 'solar ponds' to generate base load, renewable energy. They are working with the US Air Force and US Army to secure long term power contracts. This initiative (no Government funding) could use all the salt water from the Texas and Oklahoma sources, which would greatly reduce the overall project cost. It is truly a win-win proposition.

The western areas of Texas and Oklahoma are water deprived and sorely need the Chloride Control Project. The need for water quality and quantity will increase over time and this project will address those needs, as long as Federal funding is appropriated to keep the project moving ahead.

Project Funding Requests.—Included in this testimony are tables displaying the civil works projects in the Red River Valley and the appropriation needs for fiscal year 2013.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations, municipalities and citizens we represent throughout the four State Red River Valley region. The Civil Works program directly relates to national security by investing in economic infrastructure. If waterways are closed companies will not relocate to other parts of the country—they will move over seas. If we do not invest now there will be a negative impact on our ability to compete in the world market threatening our national security.

RED RIVER O&M PROJECTS (\$000)

Project	Fiscal Year 2013	RRVA Fiscal Year 2014 Request	President Fiscal Year 2014
DE Queen Lake, AR	1,870	3,393	1,902
Dierks Lake, AR	1,567	2,213	1,586
Gillham Lake, AR	1,463	1,437	1,735
Millwood Lake, AR	2,680	6,690	2,706
Bayou Bodcau Reservoir, LA	1,041	1,891	1,204
Bayou Pierre, LA	24	36	23
Caddo Lake, LA	216	522	207
Wallace Lake, LA	232	997	222
J. Bennett Johnston Waterway, LA	8,434	25,633	8,795
Basic Annual O&M .....	.....	12,230	.....
Backlog Maintenance .....	.....	13,403	.....
Old River, LA (MR&T)	8,050	21,647	8,118
Broken Bow Lake, OK	2,425	7,025	5,704
Hugo Lake, OK	1,716	1,716	2,866
Pine Creek Lake, OK	1,053	1,053	1,279
Sardis Lake, OK	3,801	3,801	1,412
Waurika Lake, OK	1,616	1,616	1,340
Chloride Control, Area VIII, TX	1,529	1,529	1,591
Denison Dam & Lake Texoma, TX	7,137	13,837	11,227
Basic Annual O&M .....	.....	6,393	.....
Backlog Maintenance .....	.....	7,444	.....
Estelline Springs, TX	42	42	43
Lake Kemp, TX—Total Need	241	241	285
Pat Mayse Lake, TX	1,148	2,421	1,004
Jim Chapman Lake, TX	1,736	4,553	1,758
Lake of the Pines, TX	3,529	8,848	3,400
Wright Patman Dam & Lake, TX	3,513	12,888	4,511

Note.—Budget allocations shown do not include 5 percent sequester reductions.

RED RIVER GENERAL INVESTIGATION (GI) & CONSTRUCTION GENERAL (CG) PROJECTS (\$000)

	Fiscal Year 2013 Appropriation	RRVA Fiscal Year 2014 Request	President Fiscal Year 2014 Budget
I. Studies (GI):			
1. Navigation into SW Arkansas: Feasibility	302	.....
2. Red River Waterway, LA—12' Channel, Recon	100	.....
3. Bossier Parish, LA	270	.....
4. Cross Lake, LA Water Supply Supplement
5. SE Oklahoma Water Resource Study: Feasibility	500	.....
6. Washita River Basin, OK	500	.....
7. SW Arkansas Ecosystem Restoration: Recon Study	47	.....
8. Cypress Valley Watershed, TX	175	.....
9. Sulphur River Basin, TX	1,000	.....
10. Wichita River Basin above Lake Kemp, TX: Recon	100	.....
11. Red River Above Denison Dam, TX & OK: Recon	100	.....
12. Red River Waterway, Index, AR to Denison Dam	100	.....
13. Mountain Fork River Watershed, OK & AR, Recon
14. Walnut Bayou, Little River, AR	100	.....
15. Little River County/Ogden Levee, AR, Recon	100	.....
16. Red River Waterway, Index to Denison, Bendway
II. Construction General (CG):			
1. Red River Waterway: J. B. Johnston Waterway, LA	2,000	22,000	.....
2. Chloride Control Project, TX & OK	8,500	.....
Texas—7,500	7,200	.....
Oklahoma—800	1,300	.....
3. Red River Below Denison Dam; AR & LA	90	18,000	.....
a. Bowie County Levee, TX
4. Red River Emergency Bank Protection	20,000	.....
5. McKinney Bayou, AR, PED

RED RIVER GENERAL INVESTIGATION (GI) & CONSTRUCTION GENERAL (CG) PROJECTS (\$000)—
Continued

	Fiscal Year 2013 Appropriation	RRVA Fiscal Year 2014 Request	President Fiscal Year 2014 Budget
III. Continuing Authority Program (CAP):			
1. Big Cypress Valley Watershed, TX: Section 1135
2. Palo Duro Creek, Canyon, TX: Section 205	100	.....
3. Millwood, Grassy Lake, AR: Section 1135	100	.....
4. Miller County Levee, AR, Sec 1135

Grant Disclosure.—The Red River Valley Association has not received any Federal grant, sub-grant or contract during the current fiscal year or either of the two previous fiscal years.

Please direct your comments and questions to our Executive Director, Richard Brontoli, E-mail: redriverva@hotmail.com, P.O. Box 709, Shreveport, LA 71162.

PREPARED STATEMENT OF THE YAZOO-MISSISSIPPI DELTA LEVEE BOARD

This is a reminder to the U.S. Senate Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on Federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. Because of these facts we respectfully request an appropriation in the sum of \$500 million for the Mississippi River and Tributaries Project.

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our Nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line item in the budget. To remove it will destroy the continuity of this high value and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our Nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our Nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire Nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our Nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great Nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the Nation made to prevent another calamitous natural disaster like the 1927 flood, the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed, despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from April 21–May 3 over a significant portion of six States that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mis-

sissippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our Nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our Nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our Government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectively request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1937, also allow barge traffic and a near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been non-existent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

(a) **SPECIAL FLOOD HAZARD AREAS.**—Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) **RESIDUAL RISK AREAS.**—The regulations required by subsection (a) shall—

(1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) **MANDATORY PARTICIPATION IN NATIONAL FLOOD INSURANCE PROGRAM.**—

(1) **IN GENERAL.**—Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

(2) **LIMITATION.**—The mandatory purchase requirement under paragraph (1) shall have no force or effect until the mapping of all residual risk areas in the United States that the Director determines essential in order to administer the National Flood Insurance Program, as required under section 19, are in the maintenance phase.

Thank you for understanding the tremendous negative impact this piece of legislation would have had on the entire Mississippi River Valley. Billions of dollars already spent on flood control structures would be negated because of needless MANDATORY flood insurance premiums. Please remember the 1928 flood control act recognizes the investment of the local people by initial construction and taxation of themselves for maintenance. This investment was over 200 million dollars in 1928 and totals more than 17 billion dollars today. Making the total investment in the MR&T over 30 billion dollars. Because of this, it is still necessary to discuss the new policies being implemented by the Federal Emergency Management Agency in their Map Modernization Program.

The policy creates a New Zone "X" (shaded) designated area. This new designation shows all areas behind a levee as an unsafe place to live and recommends, among other things, an evacuation plan and flood insurance.

This designation renders all work done by local and Federal organizations for the last 100 years, useless. Even if our levees are Federal Levees and have received an outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy economic development for over 22,000,000 acres

of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. The insurance industry would love nothing more than the ability to collect flood insurance premiums without the possibility of paying claims because of the hard work of the U.S. Army Corps of Engineers and local levee and drainage districts across this country.

With the tragedy that struck the Gulf Coast and East Coast, we must now turn our attention to the future and attempt to make certain that at least the flooding does not take place again. We can prevent that; the Dutch, the English and the Italian have done it and so can we if we treat flood control as something that we must do. The citizens of this great Nation deserve it.

There are four anomalies of nature that cause death and destruction to our Nation. They are (1) earthquakes, (2) hurricanes, (3) tornadoes and (4) floods. The first three we can do very little if anything about except to prepare for the worst. We can build protection against floods, against the "maximum probable flood", one that has an "improbable occurrence but nevertheless a remotely possible one".

In order to provide such protection we believe that three things must be done. First, the environmental laws, or at least the way they are interpreted for flood control projects, must be changed or we stand to lose more lives and have another absolute environmental catastrophe such as the one we have witnessed in New Orleans and along the Gulf Coast. Second, cancel all cost-sharing for flood control projects unless we do intend to only protect those that can afford it and ignore those that can not. Third, relax the requirements for the benefit to cost ratio for flood control projects for one reason, it is impossible to assign a dollar value to a human life. It is our opinion that these things must be done, for without flood control, nothing else really matters. I close with a simple reminder. The MR&T system is not complete and therefore will not pass the Project Design Flood! Thank you for your leadership and the resulting 100's of billions of dollars averted because you supported and funded the greatest civil works project on the planet . . . the MR&T!

DEPARTMENT OF ENERGY

PREPARED STATEMENT OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

To the chair and members of the subcommittee: Thank you for this opportunity to provide testimony on the importance and need for strong Federal R&D efforts in the fields of oil and natural gas, coal, and geothermal technologies. These activities reside in the U.S. Department of Energy's fossil energy program (oil, natural gas, coal) and energy efficiency and renewable energy program (geothermal). They are an essential investment in this Nation's energy security.

The American Association of Petroleum Geologists (AAPG) is the world's largest scientific and professional geological association. The purpose of AAPG is to advance the science of geology, foster scientific research, and promote technology. AAPG has over 38,000 members around the world, with nearly two-thirds living and working in the United States. These are the professional geoscientists in industry, government and academia who practice, regulate and teach the science and process of finding and producing energy resources from the Earth.

AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum geology play in energy security and our society.

You are certainly aware of how oil and gas from shales has quickly boosted domestic energy production, adding well-paying jobs, stimulating manufacturing and enhancing U.S. energy security. This energy renaissance would not have been possible without fossil energy R&D, started in the 1970s at the DOE's predecessor agency, the Energy Research and Development Administration (ERDA).

Methane hydrates could well represent the next energy frontier. Methane is the predominant component of natural gas and hydrates in arctic sediments and in sediments of the Outer Continental Shelf hold vast quantities of this potential resource. The DOE fossil energy program began research on methane hydrates in 1997, when methane hydrates were only a scientific curiosity. By the winter of 2011–2012, the DOE, in partnership with ConocoPhillips and Japan Oil, Gas and Metals National Corporation (JOGMEC), successfully completed a research well on the Alaska North Slope to produce experimental quantities of methane from subsurface hydrates.

Building on the lessons learned at the Alaska well, Japan successfully extracted methane from hydrate deposits offshore Japan in early March of this year. Funding of the DOE methane hydrate program at an annual level of \$40 to \$50 million would help move this novel, potential energy source toward commercialization. U.S. scientists lead the world in scientific understanding of this resource and continued Federal R&D support will enable us to remain at the forefront of developing this novel resource.

What is frequently misunderstood, however, is that the Federal energy R&D investment cannot be solely focused on new and alternative energy sources. Growing domestic production from shales, is resulting in on-going improvements in efficiency and environmental safety. But fully realizing the potential of these resources for the benefit of U.S. consumers requires additional scientific insights and technological breakthroughs. After all, our Nation is not facing a choice between existing and new energy sources, although that is often how the energy debate is framed. Instead oil, natural gas, and coal currently supply 82 percent of the Nation's energy. These resources are the foundation of our energy future. Upon this foundation we are now developing and deploying new and alternative energy sources.

Our Nation's R&D policies must recognize the need to keep this foundation strong while simultaneously investing in the energy sources of the future.

Oil and natural gas technologies program

AAPG strongly urges increased funding for the DOE oil and natural gas technologies programs. They are regularly either targeted for elimination or funded at levels insufficient to conduct necessary field experiments. This is ironic considering oil and natural gas deliver 62 percent of our Nation's energy.

Oil supplies the overwhelming volume of all transportation fuels. Natural gas heats homes and businesses, generates electricity, is a chemical feedstock, and is

emerging as a potential transportation fuel. Supplying the oil and natural gas consumed today and in the future requires significant technological advancements.

Several commonly overlooked trends in the oil and natural gas sectors support a Federal role in oil and natural gas technologies R&D:

1. The independent oil and gas producer is responsible for finding and producing most U.S. oil and natural gas resources. According to the Independent Petroleum Association of America (IPAA), a trade association, independent producers produce 54 percent of the Nation's oil, 85 percent of the Nation's natural gas, and develop 95 percent of the Nation's oil and natural gas wells. The median-sized independent producer is the epitome of American small business.
2. Independents typically work on projects that are too small for vertically integrated "major" oil and gas companies to develop commercially. Technology is vitally important for locating these resources underground, but these producers do not have the capacity to conduct independent research.
3. Increasingly domestic oil and natural gas production is coming from non-traditional (unconventional) resources, such as the Marcellus Shale of Appalachia or the Bakken formation of the Williston Basin. The Monterey Shale of California is a new, huge but geologically unique resource that will require additional scientific study and new technologies to develop. These resources hold the key to American energy security, but their development requires significant R&D investment.
4. Federal R&D has historically provided support for the Nation's universities and colleges, which have proven to be a rich source of technological innovation. But, as Federal support for oil and natural gas technology development has waned, so has the ability to conduct this type of research and train the next generation of U.S. scientists and engineers. There is a serious workforce shortage rapidly approaching both industry and government.

The goal of a robust Federal R&D program in oil and natural gas technologies is to enable and encourage the environmentally responsible development of the Nation's petroleum resources on behalf of the American people. This includes conventional oil and natural gas, non-traditional resources, and emerging resources, such as methane from methane hydrates, which according to a 2010 study by the National Research Council "could help to provide greater energy security for the United States and to help address future energy needs globally."

We request the Subcommittee on Energy & Water Development Agencies appropriate \$100 million for oil and natural gas technology programs in the Department of Energy's Office of Fossil Energy to support research projects that target increased production of domestic oil and natural gas resources. This funding recommendation assumes that, in addition to the appropriation, \$50 million per year funding for the Research Partnership to Secure Energy for America will continue.

Coal program

The Nation's coal resource is essential to U.S. energy security. AAPG supports research and development funding for coal, including clean coal technologies such as carbon capture and sequestration. AAPG supports \$276 million for these activities, the President's fiscal year 2013 request.

Again, these investments must be balanced. In evaluating the DOE coal program, I urge you to review the findings of the National Academy's report entitled Coal: Research and Development to Support National Energy Policy, released in June 2007. The study finds that while there are significant uncertainties in U.S. coal reserve and resource estimates, there is sufficient coal at current consumption to last for more than 100 years.

However, there is a real need for more "upstream" coal research to increase our understanding of the Nation's resource base. The study group observed that presently over 90 percent of Federal R&D spending for coal is on the "downstream" side, focused on utilization, carbon capture and sequestration, and transport and transmission. Only 10 percent goes to resource and reserve assessment, mining and processing, environment/reclamation, and safety and health.

Geothermal energy technologies program

Geothermal energy is an important alternative energy resource that provides base-load power to the Nation's electrical grid. Significant expansion of geothermal power production may be possible through the development of enhanced or engineered geothermal systems, but developing and proving these technologies requires R&D investment.

AAPG supported the nearly \$400 million for geothermal energy R&D and deployment in the American Reinvestment and Recovery Act of 2009. AAPG supports \$65

million for the DOE geothermal program, the President's fiscal year 2013 budget request.

Summary

Thank you for the opportunity to present this testimony to the subcommittee. Our Nation has the resources and capacity for a bright energy future. Ensuring this future requires prudent investment in R&D to deliver the science and technology needed to supply the conventional energy sources we will rely on in coming decades, and the breakthroughs in new and alternative energy sources that will power the future.

If you have any questions about AAPG or this testimony, please contact Edith Allison, the director of our policy office in Alexandria (e-mail: eallison@aapg.org).

PREPARED STATEMENT OF THE AMERICAN PHYSICAL SOCIETY

To: U. S. Senate Energy and Water Development Appropriations Subcommittee
 From: Executive Committee, Division of Particles and Fields, APS

We write on behalf of the professional society of high energy physics, the Division of Particles and Fields (DPF) of the American Physical Society (APS). The Division of Particles and Fields has over 3500 members and is one of the largest Divisions of the American Physical Society. We strongly endorse the recent testimony presented to your committee by the Executive Committee of the Fermi National Accelerator Laboratory Users Organization in support of research in our field.

The declining budgets in the High Energy Physics program of the Department of Energy's Office of Science will have devastating effects in our field that will be felt for decades. They will undermine our Nation's long-term leadership in fundamental science, our ability to capitalize on far-reaching technological innovations that have a critical effect on our economic growth, and our ability to train a new generation of the best and brightest scientists in the world who will contribute to our country in many different ways.

We urge your committee to support fundamental science and sustain funding to our high energy physics research program.

Sincerely,

The Executive Committee of the Division of Particles and Fields.

Jonathan L. Rosner, Chair; Ian Shipsey, Chair-elect; Nicholas Hadley, Vice-Chair; Pierre Ramond, Past Chair; Howard Haber, Secretary/Treasurer; Robert H. Bernstein; Marjorie Corcoran; Jonathan Feng; Yuri Gershtein; Lynne Orr; Sally Seidel; and Nikos Varelas.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

On behalf of the American Society of Plant Biologists (ASPB), we submit this statement for the official record to support the President's request of \$5.152 billion for the Department of Energy (DOE) Office of Science for fiscal year 2014. Our testimony highlights the importance of sustained investments in biology research-particularly plant biology research, which is a major backbone for enhanced bioenergy production-as the Nation seeks to address energy security and other vital issues.

ASPB recognizes the difficult fiscal environment our Nation faces, but we believe investments in scientific research constitute critical steps toward economic recovery. We would also like to thank the subcommittee for its consideration of this testimony and for its support for the fundamental research mission of the DOE Office of Science.

ASPB is an organization of approximately 4,500 professional plant biology researchers, educators, graduate students, and postdoctoral scientists with members across the Nation and throughout the world. A strong voice for the global plant science community, our mission-achieved through work in the realms of research, education, and public policy-is to promote the growth and development of plant biology, to encourage and communicate research in plant biology, and to promote the interests and growth of plant scientists in general.

Fuel, Food, Environment, and Health: Plant Biology Research and America's Future

Plants are vital to our very existence. They harvest sunlight, converting it to chemical energy for food and feed; they take up carbon dioxide and produce oxygen; and they are the primary producers on which most life depends. Indeed, plant biol-

ogy research is making many fundamental contributions in the areas of domestic fuel security and environmental stewardship; the continued and sustainable development of better fuels, foods, fabrics, pharmaceuticals, and building materials; and in the understanding of foundational biological principles that underpin improvements in plant growth and home-grown energy sources for all Americans.

In particular, plant biology is at the center of numerous scientific breakthroughs in the increasingly interdisciplinary realm of alternative energy research. For example, discoveries will enable energy crops that are more drought and pest tolerant, thereby greatly boosting yields. Bioenergy research encompasses fundamental and applied plant biology, engineering, chemistry, and physics, representing critical frontiers in both basic biofuels research and bioenergy production. Similarly, with the increase in plant genome sequencing and functional genomics, the interface of plant biology and computer science has become essential to our understanding of complex biological systems, ranging from single cells to entire ecosystems. This research is critical for our future in bioenergy production.

Despite the fact that foundational and mission-oriented plant biology research—the kind of research DOE funds—underpins vital advances in practical applications in energy, health, and the environment, plant scientists have had to leverage modest Federal funding in order to understand the basic functions and mechanisms of plants. Strong investments in plant biology research are important considering the significant positive impact crop plants have on the Nation's economy and in addressing some of our most urgent challenges, including energy and food security.

To address these future challenges and how they might be mitigated through investments in plant biology research, ASPB organized a two-phase Plant Science Research Summit in September 2011 and January 2013. With support and funding from DOE, the National Science Foundation, the U.S. Department of Agriculture, and the Howard Hughes Medical Institute, the Summit brought together representatives from across the full spectrum of plant science research to develop a ten-year consensus plan to fill critical gaps in our understanding of plant biology to address the grand challenges we face. As a research community, our vision is to create plant systems that are flexible and adaptable to new and existing challenges by increasing the predictive and synthetic abilities of plant biology. In achieving these goals, the plant science research community will make significant contributions to:

- Exploring, conserving, and utilizing our natural resources;
- Protecting, maintaining, and improving energy crop productivity; and
- Creating new plant-inspired industries.

ASPB expects to publish a report from the Plant Science Research Summit in spring 2013. This report will further detail the plant science community's priorities and the key initiatives needed to address our grand challenges.

Recommendations

Because the ASPB membership has extensive expertise and participation in the academic, industry and government sectors, ASPB is in an excellent position to articulate the Nation's plant science priorities as they relate to fundamental plant biology and, specifically, with regard to recommendations for bioenergy research funding through DOE's Office of Science.

Within the Office of Science, the programs in Biological and Environmental Research (BER) and Basic Energy Sciences (BES) are crucial to a mechanistic understanding of the most fundamental biological processes and how they may be adapted and applied in developing renewable energy capabilities. For this reason, ASPB is supportive of the President's requests for BER and BES. Sustained funding for these programs is vital as the discoveries made in these areas will ultimately be the foundation for the next fuels and technologies we use in our daily lives.

In addition:

- We commend the DOE Office of Science, through its programs in BES and BER, for funding the Bioenergy Research Centers and the Energy Frontier Research Centers. These centers provide a model for collective science innovation that complements DOE's essential investment in individual investigator and small group science. In addition to continued investments in these centers, ASPB strongly encourages additional funding for the DOE Office of Science that would specifically target funding for individual or small-group grants for bioenergy and plant growth research.
- Photosynthetic research is one clear example of an interface between the physical sciences and biology. The DOE Office of Science has been the major source of funding for fundamental studies of photosynthesis, which is the primary source of chemical energy on the planet. However, the current funding available for photosynthetic research is not commensurate with the central role that photosynthesis plays in energy capture and carbon sequestration. Hence, ASPB

calls for the Office of Science to expand its research portfolio in the area of photosynthesis and carbon capture.

—Considerable research interest is now focused on the processing of plant biomass for energy production. Fundamental discoveries regarding the genes that control plant growth and enable plant growth in response to stresses, including drought, are needed to secure our energy future. If biomass crops, including woody plants, are to be used to their fullest potential, extensive effort must be expended to improve our understanding of their basic biology and development, as well as their agronomic performance and conversion efficiency in processing fixed carbon to fuels and high-value co-products. Therefore, ASPB calls for DOE to support research targeted at efforts to increase the utility and agronomic performance of bioenergy feedstocks, both in the field and for their end users in the bioeconomy.

Thank you for your consideration of our testimony on behalf of the American Society of Plant Biologists. For more information about the American Society of Plant Biologists, please see www.aspb.org.

PREPARED STATEMENT OF BOB LAWRENCE & ASSOCIATES

THE STATUS AND NEEDS OF ADVANCED TRANSMISSION CONDUCTORS, POWER ELECTRONICS, AND GRID COMPONENTS

The United States Electric Grid

Madam Chairman and members of the subcommittee: We thank you for the opportunity to present this Outside Witness Testimony on behalf of our company, Bob Lawrence & Associates, Inc., located in Alexandria, Virginia. Our testimony discusses the present status of the American Electric Power Grid and the high degree of promise for research addressing transmission conductors, power electronics, and superconducting grid component options. We recommend \$21 Million within the DOE Office of Electricity Delivery and Energy Reliability (OE) for fiscal year 2014 to address these key areas of research.

Presently, the United States Electric Power Grid contains many segments which are constrained or congested. In the coming years, electric use will continue to increase, further exacerbating the problem. As the demand for higher quality electricity continues to grow, along with the need to better integrate renewable resources, more sophisticated transmission technologies and power system understanding will be required to assure the reliability and security of the power grid.

The best official Government description of this situation and the potential solutions appears in the mission statement for the Office of Electricity Delivery and Energy Reliability (OE) within the 2012 Congressional Budget Request. This mission statement was meant to lead a national effort to modernize the electric grid. Modernization of the electric grid encourages three overarching benefits:

- facilitating a greater adoption of variable and intermittent renewable resources; energy efficient buildings; appliances; industrial equipment; and electric vehicles;
- Improving the energy efficiency of the electric transmission and distribution system; and, 3) enhancing energy security by increasing resilience to electric supply disruptions.

OE's 2012 funding request supported the development of technologies, tools, and techniques that could increase grid flexibility, enable a range of generation resources, maintain grid reliability and security in the face of increasing complexity and demand, and increase grid efficiency to minimize cost and energy consumption. The request continued support for State and regional partners to facilitate grid modernization and new transmission, and worked to enhance protection of the energy infrastructure against physical and cyber disruptions, and quickly restore energy when disruptions would occur.

Low-level transmission congestion is very common. Broadly speaking, there are three ways to mitigate congestion where it is significant enough to merit remediation. These are:

- reduce electricity demand in the congested area through energy efficiency and demand management programs;
- build more generation capacity close to the demand area; and
- build additional transmission capacity so as to enable more electricity to be delivered from distant generators. Electric system planners frequently find that a combination of the three approaches is most desirable.

(<http://energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/2012-national>)

National Electric Transmission Congestion Study

Section 216(a) of the Federal Power Act, as amended by the Energy Policy Act of 2005, directs the U.S. Department of Energy (DOE) to conduct a study every 3 years on electric transmission congestion and constraints within the Eastern and Western Interconnections. The American Reinvestment and Recovery Act of 2009 (Recovery Act) further directs the study to include an analysis of significant potential sources of renewable energy that are constrained by lack of adequate transmission capacity. Based on this study, and comments from States and other stakeholders, the Secretary of Energy may designate any geographic area experiencing electric transmission capacity constraints or congestion as a National Interest Electric Transmission Corridor (National Corridor). DOE has published studies from 2006 and 2009; the 2012 study is being prepared. The studies conclude:

“Despite widespread agreement on the strategic importance of our transmission infrastructure, there is no comprehensive, consistent information on transmission usage and new transmission investment. In particular, there are no uniform reporting requirements. Substantial data are available from the regions with organized markets (CAISO, ISO-NE, MISO, PJM, NYISO, SPP), but much less are available from the non-market regions, which cover at least 1/3 of the Nation geographically. Data from the regions with organized markets are often not comparable. Each RTO and ISO has its own definitions, practices, and formats for calculating and publishing LMPs and congestion costs. The RTOs and ISOs change their footprints and market designs from time to time, making trend assessment more difficult.

The Department seeks discussion with other Government agencies, utilities, and others on several possible actions to improve transmission data. Including work with FERC, NERC, and EIA to define and collect consistent information on transmission construction, utilization, reliability, and operating practices, and to make aggregated information publically available.”

Main Grid elements to be addressed: Conductors and Power Electronics (PE)

During the late 1990's, 3M scientists investigating potential new uses for metal-matrix composites focused their attention on developing a substitute for the steel core wires used in conventional conductors used to transmit electrical power over high-voltage lines. Steel was the standard for utility transmission for nearly a century, but it incurred limitations due to its weight and the rate of sag under high temperatures.

In 1999, a prototype of 3M Aluminum Conductor Reinforced (ACCR), showed to be substantially lighter than steel and possessed the capability to be installed within existing infrastructure. The new core upgraded the line's capacity substantially, doubling it in many cases, and significantly reducing the sag potential. The core also demonstrated the durability and longevity of traditional steel core conductors, even when operated continuously at high temperatures.

Because 3M ACCR can as much as double transmission capacity on existing lines, often without rebuilding towers or expanding rights-of-way, the electric power industry has embraced it as an efficient, reliable, and cost effective way to reduce overloading and increase transmission capacity. In 2011, 3M celebrated the production of its 1,000th mile of ACCR conductor. Today, this number is over 2000 miles. More than 30 utilities, in a dozen nations on four continents, adopted the technology, helping to make these milestones possible. And, with the growing need for a robust grid to accommodate new uses such as renewable and electric vehicles at a high level of reliability, 3M anticipates that its breakthrough overhead conductor will soon find use in a rapidly expanding range of applications. The point here is that this conductor is a “first of its kind,” and research needs to be done on other similar options which can improve conductors even more! There are huge benefits for the country here!

Power Electronics (PE), according to DOE, will play a critical role in transforming the current electric grid into the next-generation grid. Existing silicon-based PE devices enable electric grid functionalities such as fault-current limiters and converters. Devices include switches, surge controllers, VAR controllers, and flow controllers. Solid-state wide bandgap (WBG) semiconductor electronics are envisioned to improve the reliability and efficiency of the next-generation grid substantially. VAR controllers can take the place of actual generators which are used to create or control reactive power. The ultimate goals of advanced Power Electronics include: enhanced grid capacity; increased reliability; and cleaner frequency with fewer harmonics.

Improvements in both power electronics (PE) systems and the devices on which they are based, will provide important components in developing a smart grid and facilitating the integration of renewable energy sources into the electric grid. Advanced PE devices and systems will allow for increased power flow control and in-

creased reliability of the electronic power system. They will also allow for precise and rapid switching of electric power to support long-distance transmission and advanced distribution topologies.

Currently, however, Si based semiconductors cannot handle required power levels and switching frequencies of next generation utility infrastructure. To address these issues, wide band gap (WBG) materials are needed; the preferred options being SiC, GaN, and Diamond, with Diamond being a far future option. OE's Smart Grid Research and Development Multi-Year Program Plan explains that PE devices based on these WBG semiconductor materials could increase the reliability and efficiency of the next generation electric grid. The materials offer the potential for sustaining higher switching speeds and frequencies, higher blocking voltages, better thermal conductivities, and higher junction temperatures than traditional Si-based equipment. Devices and components based on WBG materials are expected to substantially improve power flow, power switching efficiency, and reliability with reduced size and weight compared to Si.

Power electronics was not appropriated any money in 2010, but requested \$9.72M for 2012.

High Temperature Superconductivity (HTS) Options

Superconductivity refers to the ability of a material to conduct electricity with no resistance. Resistance-free superconductivity normally occurs in very limited combinations of elements, at the temperature of liquid helium or hydrogen, approaching absolute zero, or 0 Kelvin (K). In April 1986, 75 years following the initial discovery of superconductivity, the term High-Temperature Superconductivity (HTS) was first used when there was discovered a new, superconducting family of cuprate-perovskite ceramic materials. These materials exhibited superconducting properties above the boiling point temperature of liquid nitrogen, 77 K. These properties, when incorporated into the upgrading of today's electric grid, have the promise of providing huge advantages over present technology. Next to copper wire, HTS wires can carry five to 20 times more current in the same unit area while reducing the amount of energy lost by 75–97 percent (depending on the current).

In 1986, the HTS properties were discovered in small, centimeter-squared wafers. Today, superconducting cables are made in kilometer lengths, and all the modern countries of the world have superconducting research programs. Transformers, fault current limiters, and cables are made from HTS. Inexplicably, the Department of Energy has now terminated the program. Wrong decision. This program has, consistently, produced dramatically improving results and must be reinstated.

We thank you for the opportunity to present this testimony.

PREPARED STATEMENT OF THE COAL UTILIZATION RESEARCH COUNCIL

Introduction and Importance of Coal.—This statement is submitted on behalf of the membership of the Coal Utilization Research Council (CURC).¹ Continued and expanded utilization of America's coal resources, in an environmentally responsible manner, is in the public interest. Affordable power from coal has enabled the economic and social development of this country, allowing people to live longer, healthier and more productive lives. The availability and use of coal has guaranteed fuel options for US electricity generation, contributed to a healthy competition among fuel sources, and assured electricity consumers of affordable, reliable power even during times of volatile price swings by other fuel sources. Coal is also a promising resource for the production of transportation fuels and chemical feed stocks. Most importantly, our vast and inexpensive coal resources are an important source of jobs and economic growth. While every energy resource has its own set of advantages and challenges, coal has a long history of success in meeting its challenges through the application of technology; the dramatic reduction in criteria pollutant emissions while coal use has nearly doubled since the 1970's is evidence of the important role of technology. With a continued focus upon technology development and deployment, coal will remain a reliable, affordable and environmentally competitive resource to support our growing economy, and the key to successful technology development is (1) an informed public that understands the benefits of coal use, (2) enhanced levels of funding targeted to specific technology areas, and (3) a regulatory and public policy framework that supports coal use.

¹ CURC is an organization of coal-using utilities, coal producers, equipment suppliers, universities and institutions of higher learning, and several State government entities interested and involved in the use of coal resources and the development of coal-based technologies (see www.coal.org).

	Thousands (US) Dollars		Percent Change
	Fiscal Year 2013	Fiscal Year 2014	
Energy Efficiency & Renewable Energy (EERE)	1,820,713	2,775,700	34%
Fossil Energy R&D	536,939	429,275	-25%
CCS & Power Systems (Coal) R&D	370,650	276,631	-34%
Nuclear Energy	770,075	740,460	-4%

CURC fiscal year 2014 Budget Recommendation.—While the President has endorsed an “all of the above” approach to energy, the fiscal year 2014 budget request does not reflect this endorsement. The President proposes to cut the DOE Coal R&D budget by 34 percent (\$94 million) below previously appropriated amounts while dramatically increasing the EERE budget. CURC is recommending that the Coal R&D program be increased by \$130 million over the President’s request. This proposed increase will allow for development of technologies that can be applied to both the existing and new fleet of coal power plants, as well as industrial coal processes. The successful development of these technologies will ensure the continued utilization of coal in the near- and mid-term, and with investments in breakthrough technologies, will enable the use of our country’s vast coal resources well into the future.

The Roadmap.—Members of CURC, together with the Electric Power Research Institute (EPRI), have developed a Technology Roadmap (Roadmap) that defines the research, development and demonstration (RD&D) necessary to ensure that the benefits of coal utilization in the U.S. continue into the future. Implementation of the Roadmap recommendations is expected to result in coal-based power plants in 2025 that continue to provide affordable electricity that is competitive with natural gas and other fuels, but with CO₂ emissions rates that are 75 percent less than today’s new natural gas-based power plant. Additional benefits include the development of more cost-effective and highly efficient technologies that will result in aggressive emissions reductions and vastly improved water and by-product management.

CURC Recommendations to the fiscal year 2014 Coal Budget Request.—CURC endorses the goal of the President’s budget request to continue development of cost-effective technology to capture and use or store CO₂. However, the fiscal year 2014 Coal R&D budget is too singularly focused on the development of carbon capture and sequestration (CCS). The program should be more balanced to address the several critical technology areas important to continued coal use in the U.S. For example, the program should also focus on technology needs applicable to both the existing and new fleet of coal power plants by addressing improved efficiency, reliability, water management, and flexibility in generation (the program currently lacks any emphasis on needs relevant to the existing fleet except for CO₂ capture). In addition, the program should support “breakthrough” technology R&D across all program areas resulting in revolutionary approaches to converting coal to useful energy and products (programmatic recommendations for breakthrough technology R&D are described below in more detail). And finally, CURC recommends that the program explore ways to utilize CO₂ as a marketable commodity beyond enhanced oil recovery.

Specific CURC Funding Recommendations.—CURC’s recommendations are made to the DOE Coal R&D programs described in the fiscal year 2014 Fossil Energy budget request. And, our recommended changes are keyed to the R&D activities described in the Roadmap, including recommendations that address the existing fleet and breakthrough technologies.

Advanced Energy Systems

Advanced Combustion.—CURC recommends a total of \$45 million for the Advanced Combustion program (an increase of \$31 million over the request). Of this increase, \$11 million is recommended to further support novel chemical reactions and alternative combustion methods that produce CO₂ as a matter of process and not through the application of separate processes requiring additional equipment. Examples of these methods include chemical looping and pressurized oxy-combustion. Further, breakthrough technology development should be supported and focus on highly efficient processes such as waste heat recovery and integration, advanced thermal cycles, alternative process configurations and new working fluids for power generation. \$20 million is recommended for the initiation of an advanced ultrasupercritical (A-USC) materials component test facility to assess, under real operating conditions, the advanced materials necessary to support the high temperature and pressure conditions of a new generation of power plant technologies. R&D activities for A-USC materials have been zeroed out in the President’s budget (previously funded in the cross-cutting program). A-USC materials support highly efficient

power platforms that result in less coal used and also result in reduced emissions of both criteria pollutants and CO₂. India, China, Japan, and Europe all have nationally funded programs for development of A-USC. If the U.S. is to supply its own power generation industry and also become competitive in a very large global market, then the test facility is essential to development of materials and fabrication techniques that will enable U.S. suppliers to provide these manufactured products to domestic users as well as export these components and know-how abroad.

—*Gasification*.—CURC recommends \$33 million for the Gasification program (an increase of \$10 million over the request). This funding increase is designed to support Roadmap- identified improvements to both cost and performance for power (IGCC) and polygeneration (power plus chemicals). We recommend the funding increase support development of new concepts that can substantially cut IGCC cost; scale-up of promising higher efficiency shift catalysts that have been tested at the National Carbon Capture Center; increase operating flexibility and fast ramp capabilities to support increasing renewable energy penetration; accelerate scale up of air separation technologies; and field pilot fouling-resistant heat exchanger materials and configurations.

—*Turbines*.—CURC recommends \$14 million (an increase of \$3 million) to complete Phase II hydrogen turbine development, in preparation for anticipated market opportunities justifying investments in detailed design and development of new hydrogen turbines. We also recommend the increase to support breakthrough technology development such as high temperature turbines, pressure rise combustion, and oxy-combustion turbines.

—*Coal and Coal Biomass to Liquids*.—CURC recommends \$5 million for this program (which was zeroed out) to improve cost and efficiency of coal-to-fuels technology implementation. With CCS and biomass, coal fuels will have a lower carbon footprint than petroleum-based fuel and also enable the beneficial use of captured CO₂ for EOR. This program will help to establish U.S. leadership in the growing and highly competitive global gasification market.

Cross Cutting Research.—CURC recommends \$46.35 million for the Cross Cutting Research program (an increase of \$28.05 million over the request). Included in this recommendation is \$16 million to initiate a breakthrough technology program (in addition to those breakthroughs recommended in other programs) that is focused on novel approaches to converting coal to useful energy and products, such as nanotechnologies, bioprocesses and new materials. The modeling effort being conducted by the National Risk Assessment Program (NRAP) should be increased by \$5.65 million, a program vital to the success of carbon sequestration. CURC recommends \$12 million for DOE to initiate a water management program. Funds should focus on ensuring continued coal plant operation and R&D to address water withdrawal and consumption, in- plant management, water discharge, management of chemical species that come from new and modified emission controls, and multimedia impacts. Finally, \$4.0 million should be retained for university training and research. This program is important to the development of talent and is a strong source of scientific innovation.

Carbon Capture.—CURC applauds the Administration for recognizing the management of CO₂ emissions is not limited to coal through the proposed \$25 million “prize” to be awarded to a natural gas combined cycle (NGCC) power project that demonstrates CO₂ capture. However, if the Administration wants to be successful in this effort, the requested amount is woefully inadequate to demonstrate commercial operation of CCS. Second, CURC recommends that any funding for NGCC capture of CO₂ be in addition to—and not taken out of—funds for Coal R&D.

—*Post-Combustion*.—CURC is requesting no change to the proposed budget of \$75 million.

—*Pre-Combustion*.—CURC is requesting no change to the proposed budget of \$12 million. CURC is in alignment with programmatic direction and the proposed funding levels for pre- and post-combustion capture.

Carbon Storage.—Demonstrating and preparing for large-volume sequestration will alleviate a large area of concern for regulators and the public. It is critical that the ongoing research is brought to conclusion and that the next steps are taken for qualifying storage-ready sites. The Regional Carbon Sequestration Partnerships (RCSP) are preparing for large scale injection of CO₂. In order to continue their planned activities with no delays, CURC recommends an additional \$16.5 million for the RCSP. CURC also recommends \$50 million to support a new “carbon storage site certification program”. As explained in the Roadmap, this program is intended to characterize and qualify 5 regionally-diverse sites at a scale that each can accept 50 million tons of CO₂ at a rate of 5 million tons per year. This activity will support a future commercial industry capable of CO₂ storage. CURC also recommends \$14.5

million for storage technology development; \$6.6 million for monitoring; and \$1 million to support advanced CO₂ compression development, an activity not currently supported in the President's budget.

CCS and Power Systems (All figures in \$ Thousands)	Fiscal Year 2013 CR	Fiscal Year 2014 Request	Percent Changes Fiscal Year 2013 v. Fiscal Year 2014	CURC Fiscal Year 2014	Change from Request
Carbon Capture	69,320	112,000	62%	87,000	-25,000
Post-Combustion Capture	—	75,000	.....	75,000	—
Pre-Combustion Capture	—	12,000	.....	12,000	—
Natural Gas CCS Prize	—	25,000	.....	.....	.....
Carbon Storage	116,116	61,100	-47%	139,300	78,200
Regional Partnerships	—	40,500	.....	57,000	16,500
Geologic Storage	—	5,500	.....	14,500	9,000
MMV	—	4,900	.....	6,600	1,700
Carbon Use and Reuse	—	500	.....	500	0
Carbon Sequestration Sciences	—	9,700	.....	9,700	0
Carbon Storage Certification ¹ .....	—	—	.....	50,000	50,000
Advanced Compressor ¹ .....	—	—	.....	1,000	1,000
Advanced Energy Systems	100,554	48,000	-52%	97,000	49,000
Advanced Combustion Systems	—	14,000	.....	45,000	31,000
High Performance Materials ¹ .....	—	—	.....	20,000	20,000
Gasification Systems	—	23,000	.....	33,000	10,000
Hydrogen Turbines	—	11,000	.....	14,000	3,000
Coal Fuels & Liquids .....	—	—	.....	5,000	5,000
Fuel Cells .....	—	—	.....	0	0
Cross-cutting Research	49,435	20,500	-59%	46,350	28,050
Plant Optimization Technology	—	6,800	.....	0	-6,800
Coal Utilization Science	—	8,700	.....	—	—
—NRAP	—	4,350	.....	10,000	5,650
—CCSI	—	4,350	.....	4,350	0
Energy Analyses	—	900	.....	—	—
University Training Research	—	2,800	.....	4,000	1,200
International Activities	—	1,400	.....	—	—
Water Management ¹ .....	—	—	.....	12,000	12,000
Breakthrough Technology R&D ¹ .....	—	—	.....	16,000	16,000
NETL Coal R&D	35,225	35,011	.....	35,011	35,011
PROGRAM TOTAL	370,650	276,631	-34%	404,661	130,250

¹ CURC-EPRI Roadmap Program and does not have comparable DOE program.

PREPARED STATEMENT OF THE COALITION OF NORTHEASTERN GOVERNORS

The Coalition of Northeastern Governors (CONEG) is pleased to share with the Subcommittee on Energy and Water Development this testimony on fiscal year 2014 appropriations for the Department of Energy (DOE). Specifically, the governors request fiscal year 2014 funding of no less than the current levels for DOE's Office of Energy Efficiency and Renewable Energy, including at least \$50 million for the State Energy Program and at least \$174 million for the Weatherization Assistance Program, as well as current funding for the Office of Science and ARPA-E. In addition, the governors request at least \$105 million for the Energy Information Administration, and sufficient funding for maintenance and operation of the Northeast Home Heating Oil Reserve.

The governors recognize the fiscal challenges confronting Congress this year. Continued adequate Federal funding for these energy programs and initiatives is crucial to improving the Nation's energy security and independence while helping businesses and households across the Nation reduce their energy costs. Maintaining funding for the programs of the Office of Energy Efficiency and Renewable Energy and the Office of Science is a sound investment that strengthens the foundation of the U.S. economy by creating new products and new jobs.

Office of Energy Efficiency and Renewable Energy

The governors request no less than the current level of funding for the Office of Energy Efficiency and Renewable Energy (EERE). The Office works in partnership

with State and local governments, industry, universities and manufacturers to advance research into and greater use of energy efficiency and renewable energy technologies throughout the U.S. economy. These partnerships include such programs as building technologies that allow businesses and households to reduce their energy use and energy bills; the SunShot Initiative to help develop solar technologies that can be cost-competitive without public subsidies; and the EV Everywhere initiative to accelerate the development of clean energy transportation technologies that can lessen the use of foreign petroleum and reduce emissions from vehicles. EERE invests in next generation advanced manufacturing technologies to enhance the competitiveness of the U.S. manufacturing sector; and it leads a network of researchers to develop energy technologies for the cost-competitive generation of electricity from clean renewable sources such as solar, wind, biomass and water.

State Energy Program

The CONEG governors request at least \$50 million for the State Energy Program (SEP) in fiscal year 2014 with these funds provided as base SEP formula funding. This level of base funding is critical for the SEP to continue the successful State-Federal-private sector partnerships for many energy efficiency and conservation programs. The base SEP program is particularly important to smaller States since it allows them to significantly enhance the effective delivery of energy efficiency, conservation and renewable energy initiatives, and to leverage non-Federal resources with Federal funds.

This modest Federal investment produces proven, measurable benefits toward achieving key national energy security and economic goals. The 56 State and territory energy offices use SEP funds, along with significant leveraged State and private sector funds, to implement vital energy efficiency, renewable energy, and alternative energy demonstrations in energy end-use sectors such as buildings, industry, agriculture, transportation and power generation. SEP funds are also vital to States as they work with other State-Federal-local agencies and the private sector to prepare for natural disasters and to protect and strengthen critical energy infrastructure.

Each State uses SEP funds to carry out a wide variety of activities most appropriate for its unique energy profiles and requirements. The program provides meaningful economic benefits to business and consumers while supporting national environmental policy. Energy efficient retrofits and installation of solar systems on State buildings have saved taxpayers thousands of dollars in energy costs and have reduced carbon emissions. Creation and implementation of State energy efficiency building codes reduce energy use and costs for businesses and residents across the country. These funds also support initiatives to provide energy audits to businesses and households, and to provide public outreach and education to local residents, small businesses, farmers, and others to make them aware of opportunities to reduce energy consumption and energy bills. Using SEP funds, States also work with the private sector to showcase new clean technologies and to invest in renewable energy projects.

The SEP program yields proven energy and economic benefits. The most recent Oak Ridge National Laboratory cost-benefit analysis of the program found that every \$1 in SEP funding yields \$7.22 in annual energy cost savings, \$10.71 in leveraged funding, and annual energy savings of 1.03 million source BTUs. The DOE estimates that, based on recent appropriations levels, the SEP program results in an annual energy cost savings of \$300 million.

Weatherization Assistance Program

The CONEG governors request at least \$174 million in fiscal year 2014 for the Weatherization Assistance Program (WAP) which is an effective tool, immediately and long term, to alleviate the energy burden of low-income households by making their homes more energy efficient, safer and healthier. This level of funding is the minimum needed for the program to continue to carry out its mission of reducing the energy costs for low-income families, particularly for the elderly, people with disabilities, and children, by improving the energy efficiency of their homes while ensuring their health and safety. With approximately 38 million households eligible for assistance and 7.3 million served, the need for weatherization assistance is great, and much work lies ahead. Adequate funding for WAP is important in the Northeast where many low-income homes must heat with delivered fuels and cannot be served by existing utility-sponsored energy efficiency programs.

Low-income households pay a disproportionate share of their income on energy bills, often spending more than 19 percent of annual income on home energy compared to just 4 percent for all other households. WAP funding is provided to all 50 States, the District of Columbia, U.S. territories and Indian tribal governments to

manage a network of local weatherization providers that make cost-effective improvements to about 100,000 low-income households annually, permanently reducing energy costs for these vulnerable families.

Cost-effective weatherization measures are tailored to specific homes and climates. Some of these measures include simple yet effective services such as installing insulation, sealing ducts, tuning and repairing heating and cooling systems, and client education. The program uses advanced technologies and diagnostic equipment to develop a comprehensive cost-effective strategy to maximize energy and dollar savings. This “whole house” approach incorporates energy efficiency measures for a household’s heating and cooling systems, electrical system, and appliances. The program has become a leader in advancing these successful energy efficiency and diagnostic technologies, many of which have been adopted in the private sector and made available to the general public. Weatherization programs have demonstrated success in reducing the primary heating fuel use by an average of 23 percent per household. The U.S. Department of Energy estimates that depending on fuel prices, the annual energy bill of households receiving weatherization services is reduced by an average of \$437.

The program also has significant energy security and environmental benefits, making significant contributions to the goal of reducing the Nation’s reliance on imported fuels. According to the National Association for State Community Service Programs (NASCSP), weatherization measures reduce national energy demand by the equivalent of 18 million barrels of oil per year. For a home heated with natural gas, weatherization results in the mitigation of approximately 1.16 metric tons of carbon dioxide per year. The environmental benefits are even greater for those homes heating with fuel oil.

The non-energy benefits of the program are also substantial. Weatherization services increase the health and safety of low-income homes by detecting carbon monoxide and gas leaks in tested equipment, replacing unsafe equipment, and checking for moisture damage. The improvements enhance household safety, and lower energy costs lessen the potential for utility arrearages and service shut-offs. The program also fosters significant investments in local economies by creating jobs, offering professional training, and making housing more affordable in communities across the Nation. For every \$1 invested, WAP returns \$2.51 in benefits, including \$1.80 in energy savings, according to DOE.

Office of Science

The CONEG governors request no less than current funding levels for the Office of Science. The basic research conducted and sponsored by the Office is vital to strengthening the Nation’s leadership in science, and maintaining and enhancing U.S. competitiveness in the international field of scientific research. Basic research is a foundation to advancing the efficient production, delivery and use of energy throughout the Nation’s economy. For example, the Office of Basic Energy Sciences has established 46 Energy Frontier Research Centers (EFRCs) involving universities, national laboratories, nonprofit organizations, and for-profit entities to integrate the expertise and talent of the Nation’s leading scientists to conduct research toward meeting the critical energy challenges of strengthening the Nation’s energy security and protecting the global environment. Energy Innovation Hubs are integrated research centers that facilitate the collaboration of top scientists from academia, industry, and government to accelerate the path of critical energy technologies from basic laboratory research to pre-deployment of new technologies.

Advanced Research Projects Agency—Energy

The CONEG governors request no less than current funding levels for Advanced Research Projects Agency—Energy (ARPA-E). Innovation in energy technologies is vital to achieve the goal of reducing the Nation’s reliance on imported energy sources through the development and delivery of environmentally sound domestic energy and the creation of diverse, clean, sustainable and affordable energy portfolios. ARPA-E was created to accelerate research and development on high-risk, high-reward energy technologies. This transformative R&D is done in partnership with industry and academia, focusing on innovative breakthrough technologies for the generation, storage, distribution, and use of energy. ARPA-E strives to maximize speed and efficiency, and its management principles and practices have been recognized by government and industry.

Energy Information Administration

The governors request at least \$105 million in fiscal year 2014 funding for the Energy Information Administration (EIA). As the independent statistical arm of the Department of Energy, EIA is the leading source for reliable impartial data, analyses and forecasts on U.S. energy production, demand, consumption, imports and

prices. EIA's workload has greatly increased as national and global energy markets undergo dynamic change, and as emerging technologies change the landscape of energy production and delivery. These changes have made the comprehensive, timely, objective information and analyses provided by EIA more vital than ever to State and Federal policy makers as they develop critical energy, economic, security, and environmental strategies. For example, changes in natural gas markets and in environmental requirements for distillate fuels can affect the logistics chains that provide products to the Northeast, a region that is particularly vulnerable to supply disruptions and price volatility. EIA's close monitoring of market developments and the accurate and timely price and supply data in EIA's State heating oil and propane survey allows decision-makers to act quickly in the event of a supply disruption. EIA also collects, analyzes, and distributes a wide range of information to help consumers make informed household decisions, understanding the interaction between energy, the economy and the environment.

Northeast Home Heating Oil Reserve

The CONEG governors request sufficient fiscal year 2014 funding for maintenance and operation of the Northeast Home Heating Oil Reserve. The Northeast is uniquely dependent on home heating oil. Over 25 percent of northeast homes use fuel oil for heating. These homes account for over 80 percent of residential heating oil use nationwide, making the region particularly vulnerable to the effects of supply disruptions and price volatility.

In the event of a supply disruption, the Reserve provides a buffer that allows additional time for supplies to reach the region. Reserve locations are strategically placed throughout the region to respond rapidly and efficiently to any emergency supply interruption.

PREPARED STATEMENT OF THE EDISON ELECTRIC INSTITUTE

The Edison Electric Institute (EEI) respectfully submits this written testimony for the record to the House Appropriations Subcommittee on Energy and Water Development. We appreciate this opportunity to share our views on some of the Department of Energy's (DOE) programs for the fiscal year 2014.

EEI is the association of U.S. shareholder-owned electric companies. Our members serve 98 percent of ultimate electricity customers in the shareholder-owned segment of the industry and represent approximately 70 percent of the U.S. electric power industry.

Fuel Diversity is Critical

Embracing a diverse and balanced energy portfolio is crucial to affordable, reliable electric service. Electric companies use a variety of fuels to generate electricity, and tend to use the fuels that are most cost-effective and readily available in their region. Consequently, EEI has long advocated for an "all of the above" energy policy.

The electric power sector is the most capital-intensive industry in the United States and employs more than 500,000 workers. The investments utilities make in electricity infrastructure are an excellent source of job creation throughout the country. Last month, the Bipartisan Policy Center's (BPC) Strategic Energy Policy Initiative released its policy recommendations for the 113th Congress. On the topic of job creation, the BPC concluded:

"Energy is the lifeblood of the U.S. economy. All energy resources-energy efficiency, oil, gas, coal, nuclear, and renewable-are responsible for supporting economic growth and, in turn, employment throughout the economy. The country is dependent on the energy sector's skilled workforce to maintain the reliability and affordability of current energy systems. In the future, the energy-sector skilled workforce will be the lynchpin that will enable the country to achieve future public policy goals with respect to energy, the economy, and the environment as the next generation of energy technologies is developed and deployed." [Bipartisan Policy Center, "America's Energy Resurgence: Sustaining Success, Confronting Challenges," February 2013, p.6.]

As noted by the BPC report, electricity is a vital part of the infrastructure upon which our economy runs. In fact, industries and resources that run on electricity now account for 60 percent of our gross domestic product (GDP). These same segments account for 85 percent of GDP growth.

In formulating a fiscal year 2014 budget that addresses our Nation's economic, environmental and security goals, EEI respectfully requests that the subcommittee direct adequate resources towards these critically important "all of the above" activities.

Expansion and Improvement of the Electric Grid

Working with the Department of Energy's Grid Tech Team (GTT), electric utilities have made steady progress in upgrading their customers' analog electric meters with digital smart meters. According to the Institute for Electric Efficiency (IEE), nearly 36 million smart meters had been installed across the United States, equivalent to a third of all households, as of May 2012. This is an increase from about a quarter of all households with smart meters in September 2011. To date, 22 electric utilities in 16 States have smart meters installed system-wide. By 2015, more than half of all U.S. households are expected to have a smart meter.

According to the BPC's Electric Grid Initiative recommendations of February 15, 2013, DOE's research and development (R&D) portfolio should continue to emphasize the relevance of smart meters to the development of a more efficient grid. EEI agrees with this objective. More broadly, Congress should continue its support for DOE deployment of advanced grid technologies and complete the lessons learned from its ongoing public-private deployment efforts. With subcommittee support, DOE has already taken a number of steps in this area, including the establishment of the Smart Grid Information Clearinghouse, as well as case studies of specific projects. EEI urges strong support for funding that builds on these successes.

Electric Transportation

Electricity has the ability to transform the transportation sector, reducing our country's dependence on imported oil and improving our energy security. Plug-in electric vehicles (PEVs) and plug-in hybrid electric vehicles (PHEVs) make sense for a number of reasons, but one of them is that electricity costs about \$1 per gallon equivalent. High gasoline prices are not typical for winter-U.S. demand usually climbs when the weather warms up—but this year the national average price of a gallon of gasoline jumped 49 cents in January and February, the steepest increase ever seen for the first 2 months.

In the United States, the transportation sector imports over 40 percent of its petroleum. In 2011 alone, we sent more than \$330 billion overseas to purchase foreign oil. A February 2013 energy blueprint released by Senator Lisa Murkowski (R-AK), entitled Energy 20/20: A Vision for America's Energy Future, heralds sustained DOE investment in research and development of advanced vehicle technologies as "a chance for our country to diversify our fuel mix and break our dependence on foreign oil—and achieve energy independence from OPEC imports by 2020."

Importantly, transportation electrification opportunities are not confined just to passenger vehicles. In fact, over the next 20 years, it will be the commercial sector that drives growth, spurred by increasing electrification opportunities across a broad spectrum of industrial applications: shipyard cranes, warehouse forklifts, fleet vehicles, and any fueled application that can be converted to an electric motor.

Fossil Energy

EEI urges the subcommittee to ensure that fossil energy research, development and demonstration (RD&D) receive as much funding as possible under existing tight budget constraints. We further urge maintenance of the Section 1703 DOE loan guarantee that was established with bipartisan support as part of the Energy Policy Act (EPAct) of 2005. As noted in Senator Murkowski's Energy 20/20 report, the Section 1703 program "allows appropriations to cover credit subsidy costs, but in practice applicants have largely decided to self-pay these amounts." Moreover, "not a single loan guarantee has been closed under 1703."

EEI urges strong funding support for development and deployment of carbon capture utilization and storage (CCUS) integrated with electricity production. EEI member companies have invested hundreds of millions of dollars in first-of-a-kind demonstration projects that begin the process of integrating CCUS with electricity generation. AEP's Mountaineer Plants, privately funded by AEP and partners at more than \$100 million, started operation of a 20-megawatt (MW) project in September 2009, ceasing injection of carbon dioxide (CO₂) in May 2011, and currently performing post-injection monitoring. Southern Company's Plant Barry, a 25-MW project, began operations at the end of August 2012. Plant Barry is the result of a successful public-private partnership spearheaded by Southern Company and its project partners, including the Department of Energy. The total cost of Southern's demonstration project is more than \$111 million.

However, CCUS integrated with electricity production has not yet been demonstrated at commercial scale. CCUS has the potential to reduce greenhouse gas emissions associated with using fossil fuels only if certain economic, technical, regulatory and legal challenges are first resolved. Efforts to drive CCUS deployment forward must focus on alleviating these challenges as well as facilitating utility-scale demonstrations.

In addition to coal, EEI strongly advocates for adequate funding of policies that allow ready access to affordable natural gas for electric generation, including environmentally responsible development of shale resources by the gas industry throughout the United States. Natural gas is an increasingly important source for electric generation, especially given its availability and low prices. As a result, our industry is a strong proponent of developing our natural gas resources.

Nuclear Energy

Given that nuclear energy is the Nation's largest source of carbon-free electricity production, and that construction of new plants will create tens of thousands of jobs, EEI urges strong support for the nuclear power loan guarantee program. Under DOE's implementation, participating borrowers pay the entire credit subsidy costs, making this program different from other loan programs administered by the Department.

EEI strongly supports nuclear R&D, including funding for the acceleration of technology development and commercialization of small modular nuclear reactors (SMRs). Due largely to their economy of mass production and reduced siting costs, SMRs could comprise a future share of the electricity generation mix.

Should the Administration's budget submission, expected April 8, call for reinstatement of the uranium enrichment decontamination and decommissioning tax, EEI respectfully requests the subcommittee to reject this proposal. As stated in prior testimony, our industry has already met its financial obligations while the Federal Government failed to pay its required share of the cleanup funds. EEI appreciates the support of the subcommittee in opposing this tax in past years.

Energy Efficiency

Electric utilities are by far the largest providers of energy efficiency in the U.S., responsible for 86 percent of the total customer-funded electricity efficiency expenditures nationwide. As a result of both new efficiency programs and the continuation of existing ones, total energy savings in 2011 were enough to power 9.3 million U.S. homes for 1 year. These programs also avoided the generation of 75 million metric tons of CO₂.

EEI supports continued essential funding for DOE energy efficiency programming. Over the next decade, we expect customer-funded energy efficiency budgets, expenditures and savings will continue to grow and budgets will exceed \$14 billion by 2025, up from \$7 billion in 2012.

Transmission Siting and Permitting

New electric transmission is needed for enhanced reliability, to serve regional markets, and to deliver electric power from renewable energy projects. EPAct 2005 included provisions to improve the siting and permitting of transmission lines on Federal lands. Unfortunately, those improvements have not achieved their full potential as quickly as needed, and a few provisions have been either undermined or delayed by the courts.

In October 2011, the Administration established the Rapid Response Team for Transmission (RRTT) to find ways to facilitate and expedite review of proposed transmission line projects on Federal lands. DOE was integral to the establishment of the RRTT and a crucial participant in its work. EEI has been actively involved in the work of the RRTT. Last year, we provided training materials at the request of DOE. More recently, EEI has provided input to the agenda for the upcoming April 16, 2013, stakeholder conference on siting and permitting of transmission infrastructure.

The ultimate goal of the RRTT is to implement institutional changes in the way transmission is sited and permitted. Seven pilot projects were chosen in 2011 to identify opportunities for streamlining reviews and improving agency coordination, and the RRTT completed site visits to all pilot projects in 2012. From these visits, DOE and the RRTT will develop a list of systemic changes needed to improve Federal siting and permitting. We urge adequate funding of this important activity.

PREPARED STATEMENT OF ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

The Electric Drive Transportation Association (EDTA) is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation. We are writing regarding the fiscal year 2014 request for the Department of Energy's programs that advance electric drive technologies, including the Vehicle Technologies and Hydrogen and Fuel Cell Technologies Programs.

Our members represent the entire value chain of electric drive, including vehicle, battery, and component manufacturers, utilities and energy companies, smart grid

and charging infrastructure developers. Collectively, we are committed to realizing the economic, national security, and environmental benefits of displacing oil with hybrid, plug-in hybrid, battery, and fuel cell electric technologies.

Transportation is responsible for 71 percent of the Nation's total petroleum use and 33 percent of total carbon emissions. Almost half of the United States' petroleum needs are met with imported products, at a cost of \$451 billion in 2012. Over the longer term, increasing global demand will put upward pressure on oil prices, which has adverse implications for the U.S. economy. It's estimated that every \$10 per barrel increase costs the economy approximately \$75 billion.

The reliance of the U.S. transportation sector on a singular commodity, whose price is set in the global market, and whose availability is subject to significant geopolitical uncertainty, poses an unacceptable threat to U.S. energy and economic security. Development of domestic alternatives enhances energy security and protects consumers and the economy from price volatility, while increasing U.S. competitiveness in advanced technology and manufacturing.

Recently released studies by the National Research Council (NRC) and the Transportation Energy Futures Project (a collaboration between the Department of Energy, National Renewable Energy Laboratory and the Argonne National Laboratory) found that large scale (80 percent) reductions in petroleum use and greenhouse gas emissions were possible by 2050 with a portfolio approach to technology that includes hybrid, plug-in and fuel cell electric vehicles.

In addition, both reports found that near, medium and longer term policy efforts will have to be utilized to enable transportation changes today and pave the way for next generation technologies. EDTA agrees Federal policies advancing alternative transportation need to include programs that accelerate adoption and deployment of vehicles and infrastructure, as well as programs aimed at what the NRC study calls "long view" research and development.

The establishment of a 10-year research and development effort on the lines of the Clean Energy Trust proposed in the Administration's fiscal year 2014 budget request would provide the consistent and sustainable resources necessary to achieve these ambitious goals for petroleum use and emissions reductions.

We support the requested increases for advanced technology vehicle research and development programs, which are leveraging private sector investments to promote innovation in transportation. In collaboration with the diverse stakeholders of the electric drive industry, the Vehicle Technologies programs are helping to accelerate technology breakthroughs, promoting investment in advanced vehicle supply chains and facilitating deployment of electric drive vehicles and infrastructure. In particular, we support the requested increases for Batteries and Electric Drive Technology and for Vehicle and Systems Simulation & Testing activities, which include wireless charging, systems integration, and codes and standards for communication with the grid.

In keeping with the NRC and Transportation Energy Futures Project studies' findings that a portfolio of technologies are needed to achieve large scale petroleum and emissions reductions, we would also recommend greater parity in funding across the Department's electric drive vehicle research and development programs. Along with battery electrics, fuel cell vehicles (cars, trucks and non-road vehicles) are indispensable "zero emission/zero petroleum" options in the alternative fuel transportation portfolio. The industry is meeting aggressive cost, performance and deployment milestones as it pushes toward light duty vehicle commercialization in 2015.

In its fiscal year 2013 report, the Committee endorsed the work of the Fuel Cell Technologies program, including Technology Validation activities "focused on passenger vehicle and hydrogen infrastructure applications" as well as hydrogen fuels R&D, and Market Transformation activities "for cost-shared advanced demonstration and deployment of early market stationary power and motive applications..." We ask that the committee continue that support, in particular in the areas of vehicles and infrastructure deployment activities and in early market development, including education, validation and enabling activities, at levels sufficient to enable the industry to build on technology and market achievements to meet 2015 commercialization targets.

EDTA supports the EV Everywhere Grand Challenge, which will reduce vehicle costs and increase range and charging capabilities of plug-in electric vehicles. The program includes the voluntary Workplace Charging Challenge, in which EDTA participates, promotes private investment in electric drive infrastructure by encouraging employers to provide charging options for their employees.

As the Transportation Energy Futures report emphasizes, there are also necessary technology and efficiency gains to be made in the medium and heavy duty fleet. Electric drive in the commercial and transit fleet provides substantial fuel and

emissions reductions, while also providing savings to operators in maintenance. We ask that the Committee provide meaningful resources for medium and heavy duty program activities, including working with industry partners to advance electrification and greater cooperation with regulatory agencies, such as the Environmental Protection Agency to ensure that compliance testing advances in tandem with regulated technologies.

Finally, we strongly support the DOE's current and proposed Vehicle Deployment programs, including the Clean Cities program's work with local and regional coalitions to expand deployment of electric drive vehicles (hybrid, plug-in hybrid, battery, and fuel cell electric vehicles), other alternative fuel vehicles, and recharging/fueling infrastructure as a path to increased energy security.

With difficult choices to be made in allocating constrained resources, we respectfully ask that the Committee recognize the energy security imperative of diversifying our transportation fuels. Working with the private sector, the Department of Energy's vehicle programs are critical to providing today's and tomorrow's electric drive alternatives to oil.

We thank you for your consideration.

PREPARED STATEMENT OF THE ENVIRONMENTAL DEFENSE ACTION FUND

My name is Elizabeth Thompson and I am the President of the Environmental Defense Action Fund. I would like to thank Chairwoman Feinstein and Ranking Member Alexander for this opportunity to provide written testimony to the Subcommittee on Energy and Water Development. On behalf of the Environmental Defense Fund (EDF) I urge your support for an important new initiative to advance energy efficiency policies and measures to dramatically reduce America's energy waste. Please support funding for the "Race to the Top for Energy Efficiency and Grid Modernization" in your work on the fiscal year 2014 Energy and Water Development Appropriations bill.

EDF's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems—including America's wasteful energy consumption. We believe Race to the Top is one of those solutions.

In his State of the Union address, the President set a goal to cut energy waste in half over the next 20 years. To that end, the President's Budget Request for fiscal year 2014 provides \$200 million for "the Race to the Top" initiative. Modeled after the successful Education Race to the Top, this effort will challenge States and utilities to develop innovative new policies that would advance energy productivity. This voluntary initiative allows States the flexibility to pursue ideas that make sense for their circumstances and economic conditions. By allowing States the opportunity address their energy needs by their unique design, the programs will allow the States to be the nursery of new ideas which can then be shared with other States to further energy savings.

We recognize that the Federal Government faces significant budget challenges. For this reason the "Race to the Top" would provide merely the seed money for innovative thinking, pushing policymakers and program managers in the States to design new policies that will drive energy efficiency, smart grid, and demand response. These limited funds will drive innovative policies that will help States best-use their program dollars—further leveraging these funds. By providing the initial funding for innovation, and additional support to those with winning proposals, the "Race to the Top" will be able to drive innovation at minimal cost, sending resources to the States who know best how to save energy in their borders.

EDF believes that energy efficiency is vital to our economic growth and international competitiveness. Thank you for providing this opportunity to submit testimony. We would also appreciate the opportunity to brief you or your staff on this new initiative and the successful energy savings we anticipate it will achieve. We look forward to working with you.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

The Federation of American Societies for Experimental Biology (FASEB) respectfully requests an appropriation of a minimum of \$5.10 billion for the Department of Energy Office of Science (DOE SC) in fiscal year 2014. This figure would enable DOE SC to continue to support essential research programs that enhance human health and quality of life, invigorate the economy, bring the Nation closer to energy independence, and drive scientific advances.

As a federation of 26 scientific societies, FASEB represents more than 100,000 life scientists and engineers, making it the largest coalition of biomedical research associations in the United States. FASEB's mission is to advance health and welfare by promoting progress and education in biological and biomedical sciences, including the research funded by DOE SC, through service to its member societies and collaborative advocacy. FASEB enhances the ability of scientists and engineers to improve through their research—the health, well-being, and productivity of all people.

The United States Department of Energy's Office of Science (DOE SC) is the lead Federal agency supporting fundamental energy research and the Nation's largest supporter of basic research in the physical sciences. In addition to supporting research at over 300 institutions in all 50 States, DOE SC funds and manages ten world-class national laboratories. Research and development located at these national laboratories provide over 26,000 researchers with access to particle accelerators, advanced light sources, supercomputers, and other state-of-the-art instrumentation, much of this investigator-initiated research is in the biological sciences. In addition to serving as unique resources for academic and government scientists, the large-scale scientific tools at DOE SC facilities are critical to the research and development capabilities of over 40 Fortune 500 companies, including GE Healthcare, Exxon Mobil, Ford Motor, Boeing, and Pfizer.

Recent highlights from DOE SC-funded scientific breakthroughs include:

—*Accelerating Cancer Treatments.*—Actinium-225 (Ac-225) is among the most highly sought after medical isotopes. It releases powerful alpha particles and degrades very quickly, which facilitates the highly localized destruction of cancer cells without damaging the surrounding healthy tissue. Unfortunately, actinium is extremely rare and, until recently, extremely expensive to produce. Researchers have developed a new and economical technique that can generate 1 year's production of the rare isotope in one week. Because Ac-225 is likely to be highly effective in the treatment of diffuse cancers, which currently are among the most untreatable, improved access could open new treatment options for legions of suffering patients.

—*Building Ultra-Strong Materials.*—Stronger than steel, pound for pound, spider silk combines remarkable flexibility and extreme strength. Researchers used the high-brilliance X-ray beams of the Advanced Photon Source at Argonne National Laboratory to understand the basis of the material's unique properties. They found that spider silk's strength comes from crystalline lattices that make up about 10 percent of the material, and its flexibility comes from amorphous regions that comprise the remaining 90 percent. This and other insights could, in turn, lead to improved approaches to making the thinner, stronger, and lighter materials of the future.

—*Maintaining Supercomputing Leadership.*—This year the Department of Energy Oak Ridge National Laboratory unveiled the most powerful supercomputer every build, Titan. Titan is about 35 percent faster than its nearest competitor and has the capacity to execute more than 27,000 trillion calculations per second. This capacity will allow scientists and engineers to simulate highly complex physical systems in greater detail and with more accuracy. Among the supercomputer's applications are nuclear energy and weapons management, materials science, and biomedical research. Another potential use for Titan is weather forecasting and climate modeling, both of which were essential components to the timeliness and accuracy of predictions of Hurricane Sandy and other extreme weather events.

Providing Unique Resources to the Scientific Community and the Nation

A source of abundant, safe, and sustainable energy is essential for the Nation's future, and fundamental research supported by DOE SC provides the basis for discovering new energy technologies that can replace fossil fuels and reduce U.S. dependency on foreign oil. DOE SC-funded scientists and engineers are also making extraordinary discoveries in other areas of energy research that improve health, protect the environment, create economic opportunities, and strengthen national security. In addition, the national lab system advances strategic national goals and creates a research infrastructure unlike any other in the world. The advanced instrumentation and technical expertise supported by DOE SC make efficient use of unique research resources, bringing affordable access to researchers across the Nation without duplication and at minimal cost to the Nation and individual institutions.

With its crucial mission and unique research facilities, investment in DOE SC programs should be one of our highest research priorities. DOE SC user facilities benefit the entire research community by providing unparalleled scientific and technological capabilities. Now is the time to provide robust Federal funding for the fun-

damental energy research required to overcome one of the Nation's most pressing challenges. Moreover, DOE SC funding has not grown despite an increase in demand for user facility access. The number of researchers using DOE SC facilities each year rose from 20,241 in fiscal year 2007 to 25,876 in fiscal year 2010, an increase of 27.8 percent. To promote sustainability, FASEB recommends a funding level of at least \$5.1 billion for the Department of Energy's Office of Science in fiscal year 2014.

PREPARED STATEMENT OF THE FERMI NATIONAL ACCELERATOR LABORATORY USERS ORGANIZATION

The Fermilab Users Executive Committee.—Mary Anne Cummings (Muons, Inc.), Craig Group (University of Virginia), Sergo Jindariani (Fermilab), Daniel Kaplan (Illinois Institute of Technology), Ryan Patterson (California Institute of Technology), Gregory Pawloski (University of Minnesota), Breese Quinn (University of Mississippi), Lee Roberts (Boston University), Mandy Rominsky (Fermilab), Greg Snow (University of Nebraska-Lincoln), Nikos Varelas (Chair, University of Illinois at Chicago), Robert Zwaska (Fermilab)

We are the Executive Committee of the Users Organization of the Fermi National Accelerator Laboratory (Fermilab), located outside of Chicago, Illinois. We represent the approximately 2,500 scientists who perform research at Fermilab—our country's premier particle-physics laboratory. Also known as high-energy physics (HEP), our field is the study of the fundamental particles that are the building blocks of the Universe, as well as their role in astrophysics, and the accelerators used in their study.

The U.S. Department of Energy Office of Science and the National Science Foundation support high-energy-physics research at U.S. national laboratories and universities. More than 190 U.S. institutions in 44 States host physicists, astrophysicists, engineers, and accelerator scientists who work in high-energy physics. More than half of these institutions are funded through the DOE Office of Science.

We urge the Senate to support sustained funding for fundamental science within the Department of Energy Office of Science and the National Science Foundation. We request that the portfolio of funding for fundamental research be balanced. High-energy-physics research is a key part of these programs and yields valuable benefits to our Nation as described below.

Our field is undergoing a transition, Fermilab's Tevatron accelerator program having come to a conclusion in 2011 after an extremely successful three decades and having showed evidence for the Higgs boson. The discovery of the Higgs boson in July 2012 at the Large Hadron Collider at CERN in Geneva, Switzerland, where U.S. physicists played a leadership role, the pioneering research with powerful beams of neutrinos produced at Fermilab, and the impressive progress in the study of dark matter and dark energy in our universe open a new era in high-energy physics. New programs are underway or just beginning that will provide the basis for vibrant, world-class research at Fermilab for the next several decades. This transition is a critical time for our field in the United States and requires sustained funding in order to maintain our role in world high-energy-physics research.

Impact of Budget Cuts

Continued funding of science research is critical to our Nation. Severe budgetary cuts will have devastating effects that will be felt for decades. Science opportunities will be delayed or lost to other nations. Our reputation as the place to be for the best and brightest will be damaged.

We are deeply concerned with the administration's budget request for fiscal year 2014 that includes reductions in the High Energy Physics program within the overall total recommended for the DOE Office of Science. Over the past several years, the overall budget for High Energy Physics has been significantly reduced. We are especially concerned about the additional reductions for Fermilab under the sequester against an already reduced fiscal year 2013 budget. These reductions may require additional layoffs or furloughs. The proposed cuts come at a time when Fermilab has closed the Tevatron program, resulting in funding reductions in fiscal year 2012 as well. The High Energy Physics program has worked to consolidate resources so as to focus on new projects, especially the Long Baseline Neutrino Experiment (LBNE). The resulting savings ought to be reinvested in Fermilab in order to maintain the United States' preeminent national laboratory and program at the forefront of the international high-energy physics community.

The largest and longest-lasting impact will be in our training of the next generation of scientists. Significant cuts will force us to train fewer students. They will demoralize our current students and post-docs, and some will quit. And we will no longer attract the best students. It will take a long time to recover from even a short-term cut to funding. These young people will be the foundation on which our economic growth depends. Without the advanced training offered by fields such as high-energy physics, they will lack the skills to develop the next technology or the next new industry. Or they will be trained in other countries, and that innovation will occur overseas. It is critical that we remain attractive to U.S. and foreign students now and in the future.

Value of High-Energy-Physics Research

In our modern economy, science and technology (S&T) drive growth, as detailed in the National Academies' report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, its 2010 update, *Rising Above the Gathering Storm Revisited*, the recent book, *Knowledge and the Wealth of Nations*, and many other publications. Continued leadership in S&T fields is critical to our economic growth, national security, and position vis-&-vis the rest of the world. Innovation by a highly trained workforce is key.

Without new technological developments within the U.S., our economy will not grow and other countries will surpass us. But the most revolutionary technologies often require revolutions in our fundamental knowledge and understanding, or are invented in the research struggle of our most talented minds in pursuit of testing, measuring, and understanding new ideas and concepts. As an example, no one could have predicted the nature of our current society from the first studies of the electron at the dawn of the 20th century; however, we would not be communicating via email, fax, cellphone, or text messages without them. It has also famously been said that the light bulb could not have been invented by incremental improvements to the candle! Revolutionary technologies arise from new ways of thinking about society's problems—often derived from new experiments that ask new questions that cannot be answered using existing technology.

High-energy physics strives to understand the most fundamental aspects of nature. While we can rarely predict the outcome, the quest for knowledge has always led to numerous technological advances, a few of which are described below. What is predictable, is that we will educate and train some of the best and brightest students, who will contribute to our Nation in many different arenas.

Value of Technology Development

While the primary purpose of high-energy-physics research is not the creation or development of new technology, our work often requires it in order to accomplish our goals. Many of our experiments require technology that does not exist before the project is undertaken. Therefore, many of our researchers spend a significant part of their careers advancing high-tech particle detectors, developing complex computing algorithms, inventing new kinds of particle accelerators, or pushing the limits of high-speed electronics. Without continuous innovation we would not be able to complete our experiments. And once these advances are made, they are often used in fields as diverse as medicine, materials research, and manufacturing.

An example is the construction of the Fermilab Tevatron accelerator, which reigned as the world's most powerful device of its kind for nearly three decades. It required 1000 superconducting magnets, placed around a four-mile ring. Creating superconducting magnets requires superconducting wire. At the start of the project in the 1970s, it was known how to make such wire, but the industry needed in order to make it on a large scale did not exist. Fermilab researchers helped to build up that industry and advance its production techniques through a very successful joint government/business venture. Once the accelerator was complete in 1983, these businesses looked around to see what other projects could use superconducting wire. MRI machines that are now commonly used for medical imaging are an example. Because of the work of Fermilab in building the Tevatron, starting in the 1980s, commercial MRI scanners have now become widespread.

A current experiment led by Fermilab scientists is the Dark Energy Survey (DES). This requires a digital camera larger than any ever built. Its technological developments will ultimately influence the digital cameras available at your local electronics store as well as devices no one has yet dreamed up. A current R&D effort by a university/national laboratory collaboration is inventing new, cost-effective particle detectors with unique power to resolve events on the picosecond (trillionth-of-a-second) time-scale. These will also doubtless lead to new industrial, research, and medical applications.

High-energy physicists have invented particle accelerators and continue to steward their development. Our work requires the most powerful particle accelerators that can be built. However, thousands of accelerators are now used in many areas of technology. Of more than 30,000 particle accelerators throughout the world, only a small fraction are dedicated to high-energy physics. Most are used by industry or for medical treatment and diagnosis. The tire industry, for example, now uses particle accelerators to treat their tires, reducing both the amount of rubber needed (by three pounds per tire) and the amounts of chemicals used in the production process. This industry is both more efficient and better for our environment because of the application of particle accelerators. This success was unanticipated in the early days of accelerator development. Industrial accelerator applications now range from the manufacture of shrink-wrap plastic to the processing of industrial coatings and automobile parts.

Value of Science Education

The United States has long been the destination of choice for the best science students from around the world. Our universities provide an education that is second to none. Our national laboratories provide research opportunities that are unavailable elsewhere. Fermilab is an excellent example of this. Numerous students from foreign institutions travel to Fermilab to complete their research. Many of these students then choose to stay in the U.S. after completing their degrees.

Our students learn a variety of skills that are applicable in numerous fields. They learn to work on problems to which the answer is unknown and to adapt to unforeseen challenges. They learn skills in computer programming, data analysis, simulation of complex problems, and electronics development, among others. They learn to work in teams as members of international collaborations, finding innovative solutions to challenging problems. They learn how to take a project from start to finish, write a document detailing it, and present it to an audience. The complex analytical thinking necessary to solve problems in fundamental science can't be taught in a classroom, but is nonetheless crucial for solving problems in business and industry in the 21st century.

Many of our students choose to continue their immediate careers as post-doctoral associates. This provides a post-graduate education that further develops their skills. Post-docs generally take on more complex projects and develop leadership and management skills. Most high-energy-physics experiments involve 20 to 3000 scientists and face challenges that are similar to those in many businesses.

Scientists trained in high-energy physics work in telecommunications, software development, aerospace, education, medicine, government, and finance, to name a few. About 90 percent of our Ph.D. students put their skills to work in other fields. Private businesses are the largest and most diverse employers of scientists trained in high-energy physics. Several former HEP researchers have founded or led small and large companies, including Richard Wellner, chief scientist at Univa UD, a cloud management software company; Francisco Vaca, CEO of Vaca Capital Management LLC; George Coutrakon, former director of operations at Loma Linda University Medical Center and now Technical Director of the Northern Illinois Proton Treatment and Research Center; Homaira Akbari, CEO of SkyBitz, a satellite-based tracking company; Rolland Johnson, founder and president of Muons, Inc., an accelerator R&D company; and Nagesh Kulkarni, CEO of Quarkonics Applied Research Corp., a business and technology consulting company.

Our researchers are engaged in education at all levels and understand the importance of scientific literacy in our society. For example, hundreds to thousands of public lectures are given around the country by high-energy physicists each year. Our scientists visit local schools to share the excitement of science through physics demonstrations or presentations of their work. The QuarkNet program, funded through the Department of Energy Office of Science and National Science Foundation, trains K-12 teachers in 28 States in cutting-edge research that they can take into the classroom. More than 38,000 students attend Fermilab education activities each year.

Summary

Scientific research in general, and high-energy physics in particular, provides value to our Nation that will be lost without sustained funding from the U.S. Government. The knowledge that is gained will lead to future innovation that will maintain our world-class scientific capabilities. The path to that knowledge will lead to advances in technology that will help sustain our economic recovery. And the education of students from the U.S. and abroad will provide the knowledgeable work-force that will carry us through the next half-century.

It is critically important to maintain our world-class position in scientific research. The repercussions of severe cuts will be felt for a long time. We urge the Senate Energy and Water Development Appropriations Subcommittee to support our scientific research program for the long-term health of the Nation, and to sustain funding to high-energy physics and priority projects at Fermilab in order to reinvest in this core discovery scientific discipline.

PREPARED STATEMENT OF THE HEALTH PHYSICS SOCIETY

On behalf of the Health Physics Society (HPS), this written testimony for the record for fiscal year 2014 is submitted. By it, the Society stresses the critical importance of continued funding for the Integrated University Program (IUP) appropriated to the Nuclear Regulatory Commission (NRC) to support health physics programs, students, and faculty. This continued support is necessary to address the shortage of health physicists, which is an issue of extreme importance to the safety of our Nation's workers, members of the public, and our environment.

Health Physics is the profession that specializes in radiation safety, which is necessary for the safe and successful operation of the Nation's energy, healthcare, homeland security, defense and environmental protection programs. Although radiation safety is fundamental to each of these vital national programs, there is no single Federal agency that serves as a home and champion for the health physics profession as this profession cuts across all these sectors. However, health physics is necessary for all these sectors to exist as it supports the principle disciplines in these programs that are championed by multiple Federal agencies, such as engineers, medical professionals, law enforcement professionals, military personnel, and environmental scientists.

As the Nation's development and use of radioactive materials grew following the end of World War II, the Nation's demand for health physicists increased in the areas of energy, defense, public health, and environmental protection. This need was largely supported by student fellowships and scholarships largely from the Atomic Energy Agency (energy and defense) and Public Health Service (public health and environmental protection). However, over the years agencies and their missions changed, the nuclear power industry faltered and the Department of Energy (DOE) nuclear weapons complex downsized following the end of the cold war. This resulted in the academic program support from Federal agencies dwindling until the last remaining support from DOE was terminated in fiscal year 99. With this dwindling support, the supply of new health physicists declined and the age of existing health physics workforce increased despite the continued need for health physicists in energy, defense, public health, and environmental protection programs as well as an exponential growth in the medical and academic community. This resulted in a human capital crisis in health physics.

With the realization of the growing health physics human capital crisis in the early years of the 21st century, Congress and the DOE took action to add support to the nuclear engineering academic programs through DOE programs in the Office of Nuclear Energy (NE) and eventually agreed that this was an appropriate support mechanism for health physics academic programs in institutions across the country. In fiscal year 2005, Congress appropriated money to DOE-NE for a health physics fellowship and scholarship program as part of the University Reactor Fuel Assistance and Support budget item. Shortly thereafter, Congress reinforced its position that DOE needed to support the health physics academic programs in provisions of Section 954 of the Energy Policy Act of 2005.

Despite the need for an increased supply of health physics professionals continued to exist, the DOE ceased funding the Congressionally authorized DOE-NE health physics fellowship and scholarship program after only two fiscal years of funding the programs at minimal levels.

In fiscal year 2008, Congress, led by the House Subcommittee on Energy and Water Development, and Related Agencies, transferred appropriations for a Nuclear Education Program, including health physics programs, to the NRC. The Health Physics Society applauds this insightful action. The NRC does have a vested interest in the radiation safety due to its own activities associated with most of the sectors covered by the health physics profession. The NRC quickly addressed the demands of starting a new education support program by opening two grant opportunities for student and faculty support. Not only has the NRC ably administered this program but also it has brought needed assistance to both students and academic programs at colleges and universities throughout the entire country.

In order for the Committee to be able to put a human face on this program, Nicole Martinez, MA, a recipient of funding under this program, offers the following testimonial for your consideration.

"I attended Texas A&M University for my undergraduate degree and graduated Summa Cum Laude in December 2004 with a B.S. degree in Applied Mathematical Sciences. Upon graduation, I was commissioned in the United States Navy and became an instructor at Navy Nuclear Power training Command in Goose Creek, South Carolina. After separating from the USN in 2008, I took a job with General Physics Corporation in Montrose, Colorado. After a little over a year of working for GP, I decided to attend graduate school for health physics at Colorado State University.

After my first semester, my original advisor left the university and there was no longer funding available for me. As such, I began looking for jobs and was planning on leaving the program. However, a grant funded by the Nuclear Regulatory Commission under the Integrated University Program came in, which enabled me to remain in school. My master's research focused on the occupational radiation dose received by persons working with veterinary positron emission tomography at CSU's veterinary teaching hospital. I defended my thesis in the summer of 2011 and decided to continue on for a PhD. As part of a collaborative effort with scientists at Savannah River Site, I spent a little over a year in an internship at Savannah River National Laboratory, which included data collection for my dissertation project; my current research is in the remote sensing of plant stress, specifically reflectance spectroscopy, which has potential applications in phytoremediation. I passed my preliminary exams during the summer of 2012, and I returned to Fort Collins in January 2013 to begin data analysis and the writing process at CSU."

Without assistance from the NRC, our country would not have the benefit of Ms. Martinez's talents, and those of her fellow scholarship recipients, in the field of health physics for the future. Only with support from the NRC will we be able to continue to be able to maintain the academic infrastructure and scholarship funding that will train tomorrow's health physicists.

The Committee's favorable consideration of this request will help meet our Nation's radiation safety needs of the future.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS

The National Association for State Community Services Programs (NASCSP) urges the U.S. Senate Committee on Appropriations Subcommittee on Energy and Water Development to fund the Department of Energy's (DOE) Weatherization Assistance Program (WAP) in fiscal year 2014 at no less than \$230 million. NASCSP also supports base-formula appropriations of \$57 million for the State Energy Program (SEP) in fiscal year 2014.

In these austere budgetary times, we understand that difficult decisions have to be made amongst competing priorities. Notwithstanding, the WAP is proven, cost-effective, and measurably successful, delivering savings to low-income Americans as well as creating thousands of new jobs. Last year alone, more than 100,000 homes were weatherized and a remarkable one million homes were weatherized between April 2009 and September 2012, far exceeding all goals and expectations. WAP faces an uphill battle in the immediate future due to a sharp reduction in funding post-Recovery Act, leading to the loss of jobs and capacity to assist low-income Americans.

Congress drastically slashed the fiscal year 2012 allocation to WAP to \$68 million—the lowest level since the second year of the program in 1976—due to many States having temporarily unexpended Recovery Act and fiscal year 2011 grant funding. The unique situation of fiscal year 2012 no longer exists. Previously unexpended funds were nearly 100 percent spent out by April 1, 2013 (the start of the 2013 WAP Program Year). Without an increase in funding to at least the level of \$210 million in fiscal year 2014, it is unlikely that the WAP will be able to continue operating as a national program. Substantial job losses will occur and the taxpayers' investment in the training of weatherization workers and technical training centers will be lost as workers are idled and training centers closed.

The low-income WAP has been highly successful. Over the more than thirty-six years of its existence, it has installed energy saving improvements in more than 7.4 million homes. At peak funding, WAP generated 15,000 new jobs as well as a substantial economic impact through the supply chain of weatherization materials, suppliers and vendors.

Some examples of the Program's accomplishments include:

- Creation and support of more than 15,000 full time, highly skilled jobs within the service delivery network at peak funding levels, with 8,000–10,000 additional jobs from annual grant funding, and many more in related businesses, such as vendors, manufacturers, and materials suppliers;
- Served over 7.4 million low-income homes since the program's inception, with millions more high-energy use units still eligible and in dire need of services;
- Saves low-income families an average of \$250 to \$450 per year in heating, cooling, and electric costs, depending on their housing type, location, and fuel source;
- Returns \$2.51 for every dollar spent in energy and non-energy benefits over the life of the weatherized home;
- Serves as a foundation for residential energy efficiency retrofit standards, technical skills, and workforce training for the emerging broader residential energy efficiency retrofit market;
- Impacts communities through local purchasing and jobs, supporting over 10,000 local, American businesses nationwide;
- Reduces residential and power plant emissions of carbon dioxide by 2.65 metric tons per year per home; and
- Decreases national energy consumption by the equivalent of 24.1 million barrels of oil annually.

WAP is the largest residential energy conservation program in the Nation and serves an essential function by helping low-income families reduce their energy use. The program was developed in the late 1970s as a response to rapidly rising energy costs associated with oil shortages created by oil embargoes. Congress acknowledged that low-income families were particularly vulnerable to increased energy price fluctuations and created the program to assist those families by reducing the cost to heat their homes. WAP was institutionalized within the Department of Energy in 1979 and today operates in all 50 States, the District of Columbia, five U.S. Territories, and several Native American Tribes. Approximately 1,000 local agencies provide services in every political jurisdiction of the country using direct hire crews and local contractors to do the work, thus investing in local businesses and communities. These network providers use program funds to improve the energy efficiency of low-income dwellings, utilizing the most advanced technologies and testing protocols available in the housing industry. Since the Program's inception, more than 7.4 million homes have been weatherized using Federal, State, utility, and other monies.

The WAP is still as relevant now as it was when it was formed in response to the energy crisis of more than 35 years ago. The savings to America's most vulnerable citizens are significant and make a huge, immediate difference in their lives. These families have an average energy burden—the percentage of their income needed to pay residential energy bills—around 15 percent of their income as compared to around 3 percent for non-low-income households, or five times greater. The lowest income families have a much higher energy burden than that. For example, in the State of California, Committee Chair Diane Feinstein's home State, there are over 718,000 households below 50 percent of the Federal poverty level, making less than \$12,000 a year for a family of four. Those families have an energy burden of 53 percent, over half of their income. With lower energy bills, these families have more usable income to buy other essentials like food, shelter, clothing, medicine, and healthcare and thus invest in local businesses and communities. WAP provides a positive return on investment to meet its primary objectives of making homes warmer in winter and cooler in summer, creating safer and healthier indoor environments.

Because of the advanced diagnostics and technology developed in WAP, the program is the foundation for the emerging home performance industry and green energy efficiency retrofit workforce. There are approximately 15,000 jobs in the Weatherization network, with many more supported in related businesses, such as material suppliers. These jobs are good, living wage jobs, which are more important than ever due to the economic downturn in the housing and construction industries. Workers are highly trained and receive on-going instruction to further develop their skills. WAP is at the core of the larger energy efficiency retrofit market, and its training curricula, methods, and centers play an integral role in developing tools and techniques and a workforce. WAP managers, trainers, and technical experts figured prominently in the development of the Guidelines for Home Energy Professionals and continue to play a key role in the development of standard work specifications, standardized training curricula, worker certifications, and training facility accreditations.

In order to sustain the program, it is critical that the WAP maintain adequate funding so the network can continue to provide jobs and support local economies as well as promote energy efficiency nationwide. The fiscal year 2013 Continuing Reso-

lution level of \$68 million is not nearly enough to continue nationwide coverage of the program. Continued low funding will result in the loss of jobs, investment of local business, and energy efficiency services that ensure the financial stability, health, and safety of families across the country.

NASCSP urges the subcommittee to fund the Weatherization Assistance Program at not less than \$230 million for fiscal year 2014, the funding level necessary to sustain a national program to serve low-income families in all local communities as it has traditionally done. WAP is clearly a proven investment, has provided significant energy savings, and has helped over 7.4 million families live in safer, more comfortable living conditions. This is a program that has proved its worth and effectiveness for over thirty years. NASCSP looks forward to working with Committee members in the future to ensure that this program continues as a sustainable national program to benefit low-income Americans. NASCSP also supports base-formula appropriations of \$57 million in fiscal year 2014 for the State Energy Program.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Chairwoman Feinstein, Ranking Member Alexander, and members of the subcommittee, I am David Terry, Executive Director of the National Association of State Energy Officials (NASEO). NASEO is submitting this testimony in support of funding for a variety of U.S. Department of Energy programs. Specifically, we are testifying in support of no less than \$57 million for the base, formula State Energy Program (SEP). We deeply appreciate your strong historic support for SEP. SEP is the most successful program supported by Congress and DOE in this area. This should be base program funding, with no competitive portion, which focuses primarily on DOE's internal priorities. SEP is focused on working with private business to help facilitate direct energy project development, where most of the resources are expended. SEP has set a standard for State-Federal cooperation and matching funds to achieve critical Federal and State energy goals. The base SEP funds are the critical linchpin to help States in building on these activities and expanding energy-related economic development, much as SEP has done for over 30 years. We also support the \$230 million level for the Weatherization Assistance Program (WAP). Led by Senators' Reed and Collins, forty Senators signed a "Dear Colleague" letter to you, supporting funding of \$57 million for SEP and \$230 million for WAP. These programs are successful and have a strong record of delivering savings to low-income Americans, homeowners, businesses, and industry. We also support the funding level provided in the fiscal year'13 Budget Request for the Energy Information Administration (EIA) of \$116.4 million. EIA's state-by-state data is very helpful and has been improving. EIA funding is a critical piece of energy emergency preparedness and response, and there are significant EIA responsibilities under EISA. NASEO continues to support funding for a variety of critical buildings programs, including Building Codes Training and Assistance, Energy Star, and residential energy efficiency (including Building America) at least at the fiscal year'12 level, and Building Codes at a \$15 million funding level. The industries program (renamed the Advanced Manufacturing program) should promote efficiency that maintains and grows U.S. manufacturing jobs through the CHP Clean Energy Application Centers, Industrial Assessment Centers, industrial efficiency best practices, and advanced manufacturing technologies. The current approach does not appropriately balance funding among these activities. State and industry input shows a need to increase funding that supports the technical needs of existing small and medium-sized manufacturers that can benefit from low-cost and nearer term efficiency technologies and opportunities. Further, there should be greater emphasis on leveraging combined efforts of the States and industry. NASEO also supports funding for the Office of Electricity Delivery and Energy Reliability (OE) at the level of the fiscal year'13 Budget Request. Specific funding should be provided for the Division of Infrastructure Security and Energy Restoration of no less than \$18 million, which funds critical energy assurance activities that support State energy office—Federal coordination and capabilities on energy emergency response. For example, these activities were crucial in dealing with Super Storm Sandy. We also strongly support OE's R&D and Operations and Analysis functions. We are also interested in working with this subcommittee, Congress and the Administration on the proposed "Race to the Top" initiative. However, the proposed "Race to the Top" should not supplant SEP or WAP funding.

Formula SEP funding provides a basis for States to implement practical energy projects with businesses and aids in sharing best practices among the States. These best practices allow States to leverage funding and get a great deal accomplished.

These types of activities include energy financing programs, revolving loans, utility-based programs, energy service performance contracts, etc.

In January 2003 (and updated in 2005), Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is operating effectively and is having a substantial positive impact on the Nation's energy situation." ORNL found that \$1 in SEP funding yields: 1) \$7.22 in annual energy cost savings; 2) \$10.71 in leveraged funding from the States and private sector in 18 types of project areas; 3) annual energy savings of 47,593,409 million source BTUs; and 4) annual cost savings of \$333,623,619. Energy price volatility makes the program more essential as businesses and States work together to maintain our competitive edge.

Examples of Successful State Energy Program Activities.—The States have implemented thousands of projects. We have previously supplied to subcommittee staff examples of programs and projects implemented. Here are a few representative examples.

Alabama.—In Alabama, SEP funds are used to support the purchase and installation of energy efficient equipment in K-12 schools. The energy improvements, including HVAC systems, lighting retrofits, insulation, window and energy management controls, have been implemented in approximately 120 schools and have generated cost-savings exceeding \$1 million a year.

Alaska.—Alaska established the \$250 million Alaska Energy Efficiency Revolving Loan Fund in 2010. The fund is available to finance energy efficiency improvements for public facilities throughout the State. SEP funds were used to collect benchmarking data on about 1200 public facilities, plus approximately an additional 100 University and State-owned facilities, in order to identify high-energy using buildings.

California.—The Clean Energy Business Financing Program for manufacturers has led to the deployment of critical energy projects and products. An energy retrofit program recently led to 2500 homeowners savings an average of 29 percent on utility bills. The Green Jobs Training grants have been awarded to 46 community colleges, which has helped train 8000 people. In one example, the RichmondBUILD pre-apprenticeship Construction Skills Academy worked with Contra Costa College to improve the curriculum and program graduates now have a 90 percent job placement rate. This State is improving energy efficiency in State-owned buildings through the State Property Revolving Loan Fund Program. This sustainable loan program is supporting energy upgrades in more than 60 buildings located throughout the State—including energy retrofit projects in 18 California Highway Patrol Offices.

Illinois.—Illinois uses SEP funds to promote the development of renewable energy and energy efficiency manufacturers and supply-chain businesses in the State. Since 2010, one of its programs, the Green Business Development Grant Program, has awarded grants to 25 Illinois manufacturers that have expanded into the green technology sector by retrofitting their manufacturing processes.

Iowa.—With approximately 2,500 wind turbines in the State of Iowa, and 3,670 megawatts of generation, it is ranked second nationally in wind-produced electricity. Iowa is also recognized as a national leader in manufacturing wind energy equipment and supplies, and over the past 2 years, SEP grants have been given to several organizations to continue to install wind turbines for education and generation purposes.

Kentucky.—The Kentucky Department of Energy Development and Independence (DEDI) helps teams of designers, architects, and school administrators develop and construct, cost-effective zero-net energy capable schools. The energy use reductions and cost savings have been dramatic. The training and assistance efforts, accomplished through SEP funding, played a pivotal role in helping Kentucky pursue and achieve its market transformation goals, while simultaneously encouraging other States (e.g., VA, MD, NC) to identify similar opportunities.

Louisiana.—In Louisiana, SEP funding helps support the popular Home Energy Rebate Option Program (HERO). The program offers a cash rebate for energy retrofits, as well as providing training, and quality control for the energy raters who certify efficiency projects. During the past 2 years, more than 1,100 existing homes were retrofitted, resulting in a 30 percent average increase in energy efficiency per home and nearly 47,000 MMbtu in total annual energy savings in all homes completed.

Maine.—SEP funds supported Maine's Home Energy Savings Program which launched in 2010. To date, approximately 5,000 Mainers have conducted residential energy audits with more than 3,000 of these homeowners receiving rebates for whole-house energy upgrades. More than 100 licensed construction companies have

been certified to participate in the program, which has resulted in excess of \$27 million worth of residential energy retrofit projects.

Mississippi.—In Mississippi, an SEP grant program provides incentives to public and private entities to help deploy commercially available renewable energy technologies in 17 projects across the State. Twelve of the 17 projects involve photovoltaics (PV). Eight PV projects, representing 359.9 kW of renewable generation, have been completed, and four others are underway. One of the ongoing projects is at Twin Creeks Technologies' manufacturing facility in Senatobia, allowing the company to install a 60kW rooftop solar array at its photovoltaic production facility. This project, along with all others benefiting from the grant program, were completed in 2012. Their public buildings program is helping to finance energy-saving upgrades through performance contracting in 10 public institutions. The participating public sector partners include the Biloxi School District, Cleveland School District, Desoto County, Jefferson County, Lawrence County School District, Mississippi State Hospital, Monroe County School District, Claiborne County, Alcorn County School District and Hollandale School District. Under the program, 149 public buildings, representing more than 3 million square feet of space, have been completed.

Montana.—Montana's Alternative Energy Revolving Loan Program (AERLP) was created using a variety of funding sources, including SEP funds. AERLP provides a financing option to Montana homeowners, small businesses, non-profits and government entities to install alternative energy systems. Funds are paid back to the program over time and loaned out again and again, extending the funding benefits for years. Loans are capped at \$40,000 and carry a 3.5 percent interest rate (rate adjusted annually) with terms of up to 15 years.

New Jersey.—Among the programs funded in New Jersey through SEP, are a Combined Heat and Power (CHP) grant, a grant for energy projects in public buildings, a residential energy efficiency retrofit program, and a financing program for residential solar. The Energy Efficiency through Clean CHP program provides grants for CHP production at existing facilities of large commercial and industrial customers. All totaled, nearly 35 MW of clean energy production has resulted from this SEP-funded grant program.

New Mexico.—Among New Mexico's recent energy efficiency successes using SEP funding is a traffic light project launched in 2009 and completed in 2010. In partnership with the New Mexico Department of Transportation, this project used SEP funding to convert 355 traffic signals in 33 communities around the State from incandescent lamps to light-emitting diode (LED) lamps. After 1 year in operation, the LED traffic signals program has resulted in a 75 percent energy savings and 67 percent cost savings.

North Dakota.—In North Dakota, industrial energy efficiency activities supported through SEP funding include the North Dakota State University (NDSU) Agricultural Energy Efficiency program, a grant to support utility rebates and grants for municipal utilities to upgrade their municipal utility systems. NDSU is using SEP funding to conduct workshops on energy-conserving farming practices. To date, nearly 45 workshops have been held with over 850 participants attending.

South Carolina.—During the past 2 years a public building energy retrofit program in South Carolina, using SEP funds, has resulted in energy efficiency improvements in 579 buildings statewide. The buildings represent nearly 21 million square feet of public building space and include 32 two- and four-year colleges, 22 State agencies and 85 school districts. All measures funded through the program's grants and loans have a minimum return on investment of at least 2.5 to 1 in energy costs savings.

South Dakota.—Over the past few years, South Dakota used an SEP grant for the Office of the State Engineer to conduct an energy audit of all State-owned buildings. The audit covered more than 14 million square feet of buildings statewide and projected a potential annual energy savings to South Dakota taxpayers of more than 200,000 mWh, or about \$145,000. Cost-effective projects have been carried out in 55 buildings, totaling 7.4 million square feet of space.

Tennessee.—The State used \$15 million in funding to launch an energy efficiency loan program in partnership with Pinnacle Bank, TVA and others. \$35 million in private sector funds was leveraged. Businesses received loans for energy efficiency and renewable energy improvements paid for through energy use reductions. During the most recent quarter, projects included LED lighting in Bristol, high efficiency water heaters in Knoxville and 3 major industrial energy efficiency projects in Lexington, Chattanooga and Athens. Another partnership between the State, the University of Tennessee and Oak Ridge National Laboratory led to 236 grants and over \$40 million in private sector leverage for energy projects.

Washington.—SEP funding was used for a renewable energy and energy efficiency financing program. The loans, loan guarantees, and grants from this program are encouraging a number of innovative energy technologies. By the end of 2012, more than 30 projects were completed under this program, with more on the way.

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PREPARED STATEMENT OF THE NATIONAL HYDROPOWER ASSOCIATION

The National Hydropower Association¹ submits this statement in support of \$59 million for the U.S. Department of Energy's (DOE) fiscal year 2014 Water Power Program and its research and development (R&D) initiatives. The program provides critical R&D support to ensure that innovative new technologies and operational advancements arrive at market, increasing America's clean energy portfolio and providing economic and jobs benefits the country needs.

As we work to improve and facilitate new project development on the Nation's existing waterway infrastructure, we also strongly advocate directing resources to the U.S. Army Corps of Engineers (USACE) and Bureau of Reclamation.²

REQUESTING \$59 MILLION IN FISCAL YEAR 2014 FUNDING FOR THE DOE WATER POWER PROGRAM

In recognition of scarce Federal resources, we propose a fiscal year 2014 funding request for the DOE Water Power program that represents no increase over the current congressionally adopted funding level of \$59 million. Funds should be directed across all hydropower technology sectors including—conventional hydropower, pumped storage, marine and hydrokinetic (MHK), and conduit technologies.

ADVOCATING FOR FEDERAL R&D SUPPORT

Hydropower offers tremendous promise as a way to address some of our most pressing energy challenges while creating a multitude of economic and jobs opportunities in localities across the country. By maintaining stable funding for the Water Power program's R&D initiatives, we bring the country closer to expanding a home-grown and clean resource. Continued research into how to increase the cost effectiveness of this resource will quicken the pace to commercialize and make use of new water power generation advancements.

Furthermore, continued funding of basic and applied research and development for clean energy technologies balanced with work on commercialization, market transformation and other efforts ensures that products, services, and data assessments are transferred to the private sector.

In addition, NHA's request for continued Federal support for hydropower R&D is in line with the Administration's pledge to spur investment in renewable energy projects that also create well-paying domestic jobs. This aligns with the president's own goal to explore "targeted and smart investments to help catalyze renewable energy technologies" that can lead to more U.S. manufacturing.

THE DEPARTMENT OF ENERGY WATER POWER PROGRAM

The DOE Water Power Program is growing the Nation's global position by funding cutting-edge research to produce the next generation of hydropower, pumped storage and marine and hydrokinetic (MHK) technologies, and by accelerating the development of markets for those technologies. Over the years, the program has been the smallest of the DOE R&D programs, yet as described below, will play a central role in the future as the country looks to bring more new renewable energy online and integrate increasing amounts of intermittent energy resources.

Increasing hydropower generation provides more clean energy megawatts to the grid, and also increases the amount of grid reliability, stability and integration services needed to support the penetration of resources like wind and solar. Hydropower and pumped storage projects can provide utility and grid-scale energy storage, and other ancillary services, but doing so will require projects to operate in new ways and modes, and in some cases, utilize new technologies.

¹ NHA, with over 180 members, is the national trade association dedicated to promoting the Nation's largest renewable electricity resource and advancing the interests of the hydropower, pumped storage, and new ocean, tidal, conduit and in-stream hydrokinetics industries.

² For example, DOE has identified 12 GW of new capacity at existing non-powered dams. Of the top 100 sites, for which there is 8 GW of potential, 81 are on USACE dams.

This makes continued Federal research investments vitally important. Further, the hydropower industry employs more than 300,000 workers in the U.S., making it the largest renewable electricity production workforce in the Nation. With the DOE's goal for waterpower technologies to provide 15 percent of the Nation's energy by 2030, hydropower can provide hundreds of thousands of new jobs and economic development benefits.³

PRIORITY HYDROPOWER R&D NEEDS

In support of the country's energy independence and clean energy goals, NHA has identified industry R&D priority topics that will enhance the industry's ability to grow and develop new projects, technologies, and operational modes, to maintain and enhance generation at existing projects as well as support new project deployment.

MARKET ANALYSIS ON THE VALUE OF ANCILLARY SERVICES

In addition to being our Nation's largest renewable energy generator, hydropower provides ancillary services to the power grid such as frequency regulation, spinning reserves, voltage control, and load following, among others.

However, current market structures undervalue—and largely take for granted—the ancillary services provided by hydropower, which serves as a disincentive for further development. Improving methods to estimate the benefits of the ancillary services provided by conventional and pumped storage generation would not only refine the valuation of hydropower-generated energy, potentially leading to additional project development, it would also increase grid stability.

Initiatives could include—research market structures that would provide appropriate incentives to build new assets providing ancillary services; and improve methods to estimate and value benefits of ancillary services.

CONVENTIONAL HYDROPOWER AND PUMPED STORAGE GENERATOR R&D

Due to the significant addition of intermittent generation resources such as wind and solar to the grid, hydropower and pumped storage assets are operated with more starts and stops that increase operation and maintenance costs. Generators with faster cycling times, variable speeds, and improved efficiencies would benefit the grid, increase generation, allow for increased penetration of intermittent sources, and lower the costs for operation and maintenance.

This is particularly needed for the pumped storage sector, which is our Nation's largest form of grid energy storage accounting for 99 percent of storage capacity in the U.S. and worldwide. Due to its importance in maintaining a stable power grid, further investigation of industry needs would help to facilitate expansion of existing hydropower pumped storage and the deployment of new facilities.

Technological advancements in generators, the diversification of plant configuration options, improvement of pump-back efficiencies, and investigation of multi-phase systems all provide the potential for increased generation and grid stabilization, while reducing the price of power.

ADVANCED TURBINES

Advanced turbines have potential to add significant generation capacity by addressing environmental mitigation issues that are often barriers to adding new capacity to existing projects as well as developing new projects. Deployment, testing and monitoring of these advanced turbines is required to prove the environmental effectiveness, operational performance, and document operational and maintenance costs.

One of the major challenges facing the hydropower industry is in providing effective downstream fish passage, particularly at sites with threatened or endangered species. Advanced turbines are intended to reduce the fish mortality associated with turbine entrainment. In addition, market analysis of new potential installation locations, and comprehensive evaluations of potential uses and locations for advanced turbines will facilitate long-term deployment. Multiple site installations will be required to verify advanced turbines as its effectiveness is site dependent.

In addition, small hydropower resources in the U.S. are underutilized due the capital expense in development, environmental mitigation, and licensing. Advances in small turbine designs to reduce the cost of installation and/or environmental mitigation would lead to an increase in hydropower generation.

³DOE, Office of Energy Efficiency and Renewable Energy, "Water Power for a Clean Energy Future," at P.2. http://www1.eere.energy.gov/water/pdfs/wp_accomplishments_brochure.pdf

Further research into the recent experiences of small hydropower developers as well as reviewing the new low-head turbine applications would create efficiencies for potential project developers. Similar to large hydropower sites (which have been the primary focus of current turbine research), a primary challenge for smaller installations is fish passage and entrainment mitigation. As such, research into the available turbine and other mitigation technologies that minimize injury, mortality, as well as address water quality issues, while maximizing power generation, would facilitate small project deployment.

ADDITIONAL R&D INITIATIVES

Beyond the specifics mentioned above, the hydropower industry has identified other R&D topics including:

- hydropower generation system integration (operational forecasting of renewable energy; benefits of aggregating small distributed hydro assets);
- computational fluid dynamic (CFD) modeling (improvements in flow modeling; turbine analysis; water quality modeling and mixed phase modeling);
- flow measurement (research improved flow measurement methods and lower costs and maintenance of continuous flow measurement techniques);
- hydro resources and assets database development (clearinghouse of all available information, studies, results and compilations including growth potential, mitigation effectiveness, best practices, etc.)

SUPPORT FOR INCREASED HYDROPOWER DEVELOPMENT AT FEDERAL FACILITIES

In this request, NHA also urges the Committee to direct support to the Army Corps of Engineers Civil Works and the Bureau of Reclamation efforts to operate, maintain, and upgrade their existing hydropower projects as well as to build on their existing non-powered infrastructure.

Recent Federal studies show that thousands of megawatts of new hydropower capacity exist at non-powered dams owned or operated by the Army Corps of Engineers as well as significant growth potential at existing Bureau canals and conduits.

NHA, along with members of the NGO community, have formed a coalition to address issues with non-Federal hydropower development at these Federal sites. Without action to redress current challenges as experienced by developers wrought with costly and unnecessary delays, the country will not realize the significant energy potential these untapped sites offer.

CONCLUSION

Unlocking the vast hydropower potential of our rivers, oceans, tides and conduits requires funding the R&D and other initiatives that make innovative ideas a reality. The DOE Water Power Program is an important source of support for the researchers, scientists, and project developers and owners working to grow to our country's clean energy resources.

We urge Congress to maintain current \$59 million funding level for the DOE program and to provide funding support to the Corps of Engineers and the Bureau of Reclamation. This investment will increase not only the amount of clean, renewable hydropower generation, but also the grid services needed to expand the use of intermittent, variable energy resources as well.

PREPARED STATEMENT OF THE NATIONAL WILDLIFE FEDERATION

On behalf of the National Wildlife Federation (NWF), the Nation's largest member-based conservation advocacy and education organization, and our more than four million members and supporters, we thank you for the opportunity to provide fiscal year 2014 funding recommendations for the Department of the Energy, the Army Corps of Engineers, and other agencies under the jurisdiction of this subcommittee.

We understand the very difficult budget choices facing the subcommittee and the Nation as we move forward under the constraints of the Budget Control Act of 2011 (Public Law 112-25). That said, it is our belief that disproportionate cuts to conservation programs represent policy positions not consonant with the priorities and values of most Americans. These programs protect cherished lands and waters, conserve the natural resources that are vital to the Nation's continued economic vitality, and decrease the climate-changing carbon pollution that puts all Americans at risk.

National Wildlife Federation is committed to protecting wildlife for our children's future, and we recognize that climate change is the single largest threat facing our

wildlife, critical habitats, and public health. Without significant new steps to reduce carbon pollution, our planet will warm by 7 to 11 degrees Fahrenheit by the end of the century, with devastating consequences. For much of America's most valued wildlife, the climate crisis is already here: habitat loss and increases in droughts and wildfires are already having noticeable effects on vulnerable populations of some of America's most iconic species. Reducing carbon pollution by continuing a robust investment in clean energy is critical to transitioning the country to cleaner, more secure sources of energy.

In the wake of Hurricane Sandy and ever-increasing extreme weather events, it is more important than ever to confront climate impacts and preserve our most valuable natural buffers. Wetlands such as the Everglades and Coastal Louisiana are both incredibly biodiverse and ecologically valuable and serve as a critical buffer between coastal economies and the destructive forces of storm-driven waves and tides. NWF supports continued investment in wetlands conservation and restoration to better protect people, property, and the environment.

NWF and its members remain concerned about proposed funding reductions to many of the Federal Government's core commitments and programs for conserving fish and wildlife, sustaining and restoring important ecosystems, and maintaining clean air and water. Perhaps of even greater concern are efforts to rewrite the Nation's landmark environmental laws through the use of policy riders on the appropriations bill. National Wildlife Federation urges the subcommittee to pass a bill free of such riders while making the necessary investments in our essential conservation and environmental programs and commitments in the fiscal year 2014 appropriations bill.

National Wildlife Federation is overall supportive of the President's fiscal year 2014 budget request, which we view as balancing fiscal responsibility with continued investments in essential conservation and environmental programs. Below, we offer recommendations for specific budget items and programs.

I. DEPARTMENT OF ENERGY

Energy Efficiency and Renewable Energy

The Office of Energy Efficiency and Renewable Energy provides critical programs focused on driving clean and renewable energy research, development and demonstration. Advancing solutions that promote cleaner energy sources, jobs, and a safer and more sustainable future for our children is critical to confronting the climate crisis. EERE's work is an essential to reducing our dependence on fossil fuels and shifting toward an energy strategy that considers the protection of wildlife and their habitats. NWF is strongly supportive of the Administration's fiscal year 2014 request of \$2.78 billion for the Office of EERE. The \$995 million increase from fiscal year 2012 aligns with the President's energy goals and reflects the allocation of funding necessary for bringing such important targets to fruition.

The Offshore Wind Demonstration Funding Opportunity recognizes the market barriers to offshore wind production and offers opportunity for leading innovators in this new industry to secure funding and get the first projects in U.S. waters. By continuing this initiative, EERE's wind and water program will be able to award \$20 million to three of the seven competitively selected projects currently in their engineering phases, and support their progress through design, construction, and installation. The 6-year, \$168 million initiative anticipates funding some offshore wind deployment by 2017, allowing America to begin harnessing the potential of this significant untapped resource. The Department of Energy has a decades-long legacy of spurring innovations in wind energy, and today the wind industry employs 85,000 Americans and has large wind power projects in 38 States. Continued investment in this fast-growing industry is both economically viable and environmentally responsible. NWF endorses the Administration's request of \$46 million for offshore wind programs.

II. ARMY CORPS OF ENGINEERS

Comprehensive Everglades Restoration Plan

America's Everglades are one of the most unique and biodiverse ecosystems in the world, designated as Ramsar Wetlands of International Significance. In the 1940s the Army Corps drained the Everglades resulting in substantial wetland and habitat loss. Protection of the remaining ecosystem and restoration of ecological function are critical for water supply, wildlife, water quality, recreation, tourism, and the economy of South Florida. A recent study indicates each dollar invested in restoring the Everglades will result in a four dollar return. Beginning in the 1980s, Congress made and has affirmed its commitment to restoring the historic River of Grass by allowing fresh water to flow southward and later enacting the Comprehensive Ever-

glades Restoration Plan (CERP). This subcommittee has made substantial progress in furthering that promise in recent years by providing support to the US Army Corps of Engineers so it can fulfill the goals of CERP. Sustained funding to keep restoration projects on schedule is critical to avoiding collapse of the ecosystem, economy, and water supply of 7.5 million South Floridians. NWF strongly supports continued support and commitment to Everglades Restoration.

Louisiana Coastal Area, Ecosystem Restoration

The Louisiana coastal plain is the largest expanse of coastal wetlands in the contiguous United States, and is one of the Nation's most productive and valuable natural regions. It is home to an incredible diversity of habitats and wildlife, including endangered and threatened species and economically important finfish and shellfish, and serves as crucial habitat for migratory birds. Coastal wetlands serve as a vital buffer between storm-driven waves and tides and the nearly 2 million people and the critical industries and ports along the Louisiana coast. These invaluable wetlands are now losing a football field of land every 38 minutes—a total of 1900 square miles since the 1930s. The Coastal Wetlands Planning, Protection, and Restoration Act, locally referred to as the Breaux Act and passed in 1990, the “Coast 2050: Toward a Sustainable Coastal Louisiana” plan adopted in 1998, and the Louisiana Coastal Area, Louisiana Ecosystem Restoration Study initiated in 2002, are important steps towards stemming this alarming loss, but continued commitment from Congress is needed to ensure that one of our most valuable natural regions does not disappear. It is crucial that we continue to fund the restoration of coastal Louisiana, and NWF strongly supports the President’s new request for \$6,285,000 for Louisiana Coastal Area Ecosystem Restoration.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

The Nuclear Energy Institute¹ (NEI) appreciates the opportunity to provide testimony on Department of Energy and Nuclear Regulatory Commission programs to the House Appropriations Subcommittee on Energy and Water Development.

NEI believes the Federal Government’s nuclear energy research and development programs in fiscal year 2014 should focus on (1) developing technologies and other solutions that can improve the reliability and safety of operating reactors and extend their lifetimes; (2) developing new reactor types that will enable nuclear energy to help meet the Nation’s energy and environmental goals; (3) developing a sustainable used nuclear fuel management program; and (4) enhancing nuclear non-proliferation programs. Specifically, the nuclear energy industry:

- Opposes reinstating a Decommissioning and Decontamination Fund tax on nuclear power plant operators to pay D&D costs at the Federal Government’s uranium enrichment plants;
- Supports DOE funding for a comprehensive, sustainable used nuclear fuel management program;
- Supports increased funding for the DOE Small Modular Reactor licensing program;
- Opposes the cut in funding for the completion of the Mixed-Oxide (MOX) Fuel Facility; and,
- Supports the reforms necessary to make the DOE loan guarantee program a workable financing platform for clean energy technologies, including advanced nuclear power plants.

ANOTHER URANIUM ENRICHMENT D&D TAX UNFAIR TO ELECTRICITY CONSUMERS

NEI strongly opposes the President’s fiscal year 2014 budget plan to reinstate the uranium enrichment decontamination and decommissioning tax, which would have a negative impact on consumers of electricity in an economy struggling to recover. Despite its negative impact on all consumers of electricity, the Obama Administration continues to propose reinstatement of this tax as a means of raising revenue. The three uranium enrichment plants in question operated for 25 years as defense facilities and were irretrievably contaminated long before any sales of enrichment services to the commercial industry. In addition, the industry has paid twice its share of the funds necessary to clean up these facilities—first, payment was re-

¹ NEI is responsible for establishing nuclear industry policy on matters affecting the nuclear energy industry, including regulatory, financial, technical and legislative issues. NEI members include all companies licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, engineering/construction firms, fuel facilities, and other organizations and individuals involved in the nuclear energy industry.

ceived as part of the price for DOE uranium enrichment services from the facilities, and again under the Energy Policy Act of 1992. Under the 1992 law, the tax on electric utilities was to end after 15 years or the collection of \$2.25 billion, adjusted for inflation. The industry paid this amount in full. The industry appreciates the support of the subcommittee in previous years to reject this proposal and again encourages members to continue to oppose this unjust tax on consumers.

USED NUCLEAR FUEL MANAGEMENT

NEI asks the subcommittee to provide sufficient funds to DOE and NRC to complete the licensing of the proposed Yucca Mountain repository for used reactor fuel. NEI urges the subcommittee to provide direction and funding to DOE in support of the following Blue Ribbon Commission on America's Nuclear Future (BRC) recommendations:

- Establish a new organization dedicated solely to implementing the nuclear waste management program and empowered with the authority and resources to succeed;
- Establish one or more consolidated storage facilities for used nuclear fuel while making substantial progress toward developing a repository for fuel disposal; and
- Provide access to the annual collections and corpus of the Nuclear Waste Fund.

ADVANCED REACTOR AND FUEL CYCLE TECHNOLOGIES

NEI supports programs managed by DOE's Office of Nuclear Energy to accelerate commercial development of new reactor technologies, sustain safe operation of the reactors that provide one-fifth of America's electricity, and develop advanced fuel cycles to manage used nuclear fuel. NEI considers certain programs as extremely high priority:

- Small Modular Reactor Licensing Technical Support—\$114 million (+\$47 million)
- Fuel Cycle Research and Development—\$165.1 million
- Reactor Concepts Research, Development and Demonstration—\$72.5 million
- Energy Innovation Hub for Modeling & Simulation—\$24.3 million
- Integrated University Program—\$5 million (DOE)/\$15 million (NRC) (+\$20 million)

SMALL MODULAR REACTORS (SMRs)

As originally conceived, the SMR licensing support program was to promote accelerated development of these technologies by supporting cost-shared, first-of-a-kind activities for design certification and licensing activities for up to two SMR designs. One team was chosen from those that responded to the first Funding Opportunity Announcement (FOA), and DOE has released a second FOA to support an additional team or teams. NEI supports the second FOA and encourages DOE to complete the procurement process by September 2013, as it has proposed. Given the potential benefits—job creation, clean electricity supply, and exports—we encourage the subcommittee to ensure that this program is effectively and expeditiously implemented. Accelerated, near-term development is critical to ensure the international competitiveness of domestic SMR designs. However, this program has been underfunded by about 30 percent for the past 2 years. In order to achieve the proposed \$452 million program the committee is encouraged to provide \$114 million in fiscal year 2014. We acknowledge that DOE has now proposed a six-year cost-shared program to achieve the mission which we support. However, the Committee should recognize that additional funding may be required to accomplish the DOE's expanded plan.

ADVANCED FUEL CYCLE TECHNOLOGIES

NEI supports \$165.1 million for the Fuel Cycle R&D program, including \$60 million for DOE to implement generic activities recommended by the BRC on geological research, transportation options, extended fuel storage, and the consent-based siting process. The balance of the program funding supports a systematic and focused effort to develop advanced separation technologies and reactor types that can maximize the use of spent fuel from commercial nuclear power production. As budgets become more constrained, NEI believes that this program should be focused on, and guided by, reasonable prospects for commercial development and, wherever possible, coordinated with industry and similar programs being pursued by our international colleagues.

REACTOR CONCEPTS RESEARCH, DEVELOPMENT AND DEMONSTRATION

DOE's advanced nuclear energy research agenda is supported by this \$72.5 million budget. NEI believes \$21.5 million for the Light Water Reactor Sustainability (LWRS) program is necessary for a program in which DOE has partnered with industry and the NRC to coordinate research needs and share costs to extend the operation of commercial reactors. DOE's long-term research into advanced small reactors, gas-cooled reactor technology and accident-tolerant fuels are also supported in this budget. NEI urges subcommittee to support these initiatives.

INTEGRATED UNIVERSITY PROGRAM

NEI believes the administration's attempt to terminate the Integrated University Program (IUP) is folly at a time when demand for nuclear-trained workers is increasing and advances in nuclear science and technology can contribute to the U.S. economy, energy security, global competitiveness, and national nuclear security. A \$5-million program at DOE, together with an associated \$15-million NRC program, provides important nuclear science and engineering research and workforce training at America's universities and community colleges.

COMPLETION OF THE MOX FUEL FACILITY

NEI opposes the \$183 million cut in funds for the MOX fuel facility now under construction at the Savannah River Site in South Carolina. This facility is important to U.S. national security and as a demonstration of America's commitment to nonproliferation. It is approximately halfway through construction, at a cost of \$4 billion to date. When operating, the facility will convert some 34 metric tons (at minimum 17,000 weapons) of surplus weapons-grade plutonium into MOX fuel for use in commercial power reactors. It is estimated that the fuel from the MOX project would produce \$50 billion worth of electricity and enable the Federal Government to eliminate the expense of storage and surveillance of the plutonium. Construction and operation of the MOX plant is the result of years of work and commitments with the Russian Federation, the State of South Carolina, and thousands of workers at the site and across the country. Each of those parties made commitments to this program on the assumption that the U.S. Government is a credible partner capable of fulfilling its arms control and nonproliferation commitments. Failure to complete this project will validate those critics of the Government who claim it simply cannot complete complex projects, particularly those concerning nuclear materials disposition.

REFORM DOE'S CLEAN ENERGY LOAN GUARANTEE PROGRAM

The nuclear industry appreciates the support provided in previous years by the subcommittee for the DOE loan guarantee program for new nuclear energy plants and nuclear fuel cycle facilities. NEI urges the subcommittee to maintain the appropriated funds for projects under development.

NEI believe that the loan guarantee program has great potential. There is no cost to taxpayers for nuclear energy project loan guarantees, but there is significant benefit to consumers. The use of loan guarantees will lower the overall cost of nuclear energy projects, ultimately reducing the cost of electricity to consumers. Companies granted loan guarantees by DOE for nuclear energy projects must pay a premium (the credit subsidy cost) for use of the program, and cover all administrative costs.

New nuclear projects must have financing support—either loan guarantees from the Federal Government or assurance of investment recovery from State governments, or both. The States are doing their part. Throughout the South and Southeast, State governments have enacted legislation and implemented regulations to advance new nuclear plant construction. A comparable Federal Government commitment—in the form of a workable loan guarantee program—is in the national interest. For the nuclear energy industry, one of the most significant challenges involves determining the credit subsidy cost. NEI believes the methodology used by the Executive Branch inflates the credit subsidy cost well beyond the level required to compensate the Federal Government for the risk taken in providing the loan guarantee.

NEI encourages the subcommittee to require DOE—possibly through the Secretary of Energy Advisory Board—to conduct a systematic, disciplined, open assessment of implementation of the Title XVII loan guarantee program, identify the weaknesses in implementation, and develop recommendations to ensure that this program becomes the workable financing platform that Congress envisioned. This assessment must include consultation with, and participation by, the nuclear energy industry and the financial community to understand fully the successes and failures in implementation.

SAFETY-FOCUSED AND EFFICIENT NRC REGULATION

The nuclear energy industry's first priority is operating America's nuclear energy facilities safely and reliably. The companies that produce electricity at nuclear power plants continuously incorporate lessons learned from best practices at all U.S. facilities as well as operating experience worldwide. Safety enhancements made over more than 40 years, including new processes and procedures based on lessons learned from Fukushima, have resulted in sustained high levels of safety.

The industry encourages oversight of the NRC by Congress to ensure that the agency prioritizes its activities effectively, based on safety significance, and achieves timely closure on issues. The NRC is making initial progress in these areas—addressing the cumulative impacts of its regulatory activities—and the industry believes the agency should be encouraged to continue these efforts.

The NRC's annual budget has grown from \$442.1 million in 1990 (when the agency was regulating 112 reactors) to \$1.053 billion in 2013 (when the agency was regulating 104 reactors). The number of NRC employees increased from 2,881 in 1999 to 3,927 in 2013. Recognizing that NRC licensees pay 90 percent of the proposed \$1.06 billion budget of the NRC, we appreciate the subcommittee's oversight to ensure that NRC activities and budget are more transparent and cost-effective.

PREPARED STATEMENT OF THE NUCLEAR ENGINEERING DEPARTMENT HEADS
ORGANIZATION (NEDHO)

Chairwoman Feinstein, Ranking Member Alexander and members of the subcommittee: On behalf of the faculty and students comprising the nuclear engineering education system in the U.S., we wish to provide testimony on the fiscal year 2014 appropriations for the U.S. Department of Energy (DOE) and other relevant agencies under the subcommittee's jurisdiction.

As you begin to develop fiscal year 2014 appropriations legislation, we strongly urge you to consider our following requests:

1. Provide funding for DOE Office of Nuclear Energy (DOE-NE) research and development (R&D) programs at the fiscal year 2012 enacted levels.
2. Full funding for the Integrated University Program (IUP), with appropriations to the DOE-NE, DOE National Nuclear Security Administration (DOE-NNSA) and the U.S. Nuclear Regulatory Commission (NRC) to provide scholarships, fellowships, junior faculty awards, and other mechanisms to attract the best and brightest students and faculty into the field.
3. Continued support for the Nuclear Energy University Program (NEUP) which dedicates up to 20 percent of DOE-NE research and development (R&D) spending for work performed led by universities in partnership with national labs and industry.
4. Funding for the Nuclear Uniform Curriculum Program at community colleges and funds to improve craft training and apprentice programs with labor.

The Nuclear Engineering Department Heads Organization (NEDHO) is an alliance of nuclear and radiological science, engineering and technology academic programs across the United States. NEDHO provides a forum for discussion, coordination, and collaboration on issues such as academic accreditation, funding for scholarships, fellowships, and research, and funding for training and research reactors, all supporting the overarching goal of providing the necessary human talent for the safe, secure, safeguarded use of nuclear technology. NEDHO collaborates with the American Nuclear Society (ANS), the Nuclear Energy Institute (NEI), the Test, Research, and Training Reactors (TRTR) organization, ABET, the National Academy for Nuclear Training/Institute of Nuclear Power Operations (INPO), and other similar societies and organizations that have a stake in nuclear education. We also have strong interactions with the industry and government, both of which hire our students and utilize our research results. At present, NEDHO's membership includes 44 US academic institutions in 29 States, including 2 military academies.

NEDHO seeks to inform national decision makers on nuclear policy, science and technology, and related educational programs through Hill visits and by providing testimony at various Committee hearings such as this one. NEDHO's ultimate goal is to preserve our Nation's historic leadership in the nuclear field, and to sharpen our competitive edge in the future by maintaining a tradition of excellence in nuclear academia that is the envy of the world. For decades we have sustained the nuclear enterprise with highly qualified human resources that led to the development of nuclear power as a viable, safe, and environmentally sound source of electricity. Our graduates have also contributed to advances in nuclear medicine and a multitude of industrial applications (such as oil-well logging), and have engaged in activities in nuclear security and safeguards.

Without the types of Federal programs previously noted, the nuclear academic community would not have been in position to meet the increased demand for new nuclear workers and advances in nuclear science and technology which have been on the rise in the U.S. driven by three primary factors: U.S. economic and energy security, global competitiveness, and national nuclear security.

First, with regards to U.S. economic and energy security, we note that nuclear energy today accounts for about 20 percent of the U.S. total electricity supply and two-thirds of non-carbon-emitting electricity sources. The U.S. nuclear power industry, under a rigorous regulatory regime administered by the NRC, has established itself as a safe, environmentally responsible, economic, and highly reliable 24/7 base load provider of electric energy with about 90 percent capacity factors. Available forecasts for uranium ore indicate ample, reliable, and inexpensive supplies and suppliers for the foreseeable future. Four new AP 1000 reactors are currently under construction at the Vogtle site in Georgia and the VC Summer site in South Carolina. The completion of the Tennessee Valley Authority Watts Bar Unit 2 was approved in 2007 and construction has resumed. There is also rising interest in Small Modular Reactors (SMR). The DOE has solicited proposals for cost-shared SMRs that have the potential to be licensed by the NRC and achieve commercial operation around 2025, while offering innovative and effective solutions for enhanced safety, operations and performance. The funding for this solicitation will be derived from the total \$452 million identified for the DOE's SMR Licensing Technical Support Program. Public perception of the safety of America's nuclear fleet will be sustained by the improved features in new designs and by incorporating lessons learned from Fukushima. In addition, the recommendations of the Blue Ribbon Commission regarding the back-end of the nuclear fuel cycle offer the prospect of resolving long-standing problems in the management of used nuclear fuel.

Second, on the global scale, many nations are ambitiously seeking to build up their nuclear power capacity. Most notable are the two most populated countries in the world, China and India, whose economies are undergoing rapid growth. A recent publication by the American Nuclear Society noted that there are over 433 reactors operating in 30 countries, producing 371 GWe, or about 14 percent of the global electricity supply. A recent presentation by DOE personnel notes 154 power reactors planned in 27 countries for the next 8–10 years costing over \$740 billion, and a total of 331 reactors proposed in 37 countries over the next 15 years at a projected cost of \$1.6T. These operating and soon-to-operate reactors comprise a substantial global market for equipment (e.g. turbines, generators, instrumentation), fuel, and services. The economic rewards of U.S. engagement in this growing global market are substantial by providing high paying jobs for Americans involved in the engineering design, analysis, parts manufacturing, operations, consulting, and potential construction of new reactors. For example, the four APR-1400 South Korean reactors to be built in the United Arab Emirates are essentially based on U.S. technology and are worth billions of dollars to the U.S. economy including 5000 US jobs. International engagement is also an essential means of spreading the high U.S. technical and performance standards across the globe. The regulatory procedures in a large number of countries are adopted from U.S. regulations. A safety culture that transcends national boundaries and that is based on a solid scientific foundation and supported by decades of excellent American experience is the best guarantee that nuclear technology will remain an agent for improving the global environment.

Third, the growing number of nuclear-hopeful nations and the widening footprint of nuclear power raises concerns about nuclear proliferation to historic highs and makes a strong case for developing novel and better detectors and methods for verifying that nuclear materials are only being employed for peaceful purposes. These concerns cannot be addressed solely by controlling the flow of scientific knowledge and underlying technologies and require a revamped structure that better integrates the technical and policy aspects of the issue. In addition, the potential threat of nuclear terrorism is not likely to abate any time soon and demands the continuous and untiring vigilance of relevant agencies within the U.S. Government.

Common to all these factors is the need for a highly educated nuclear workforce that is aware of national needs and that is well equipped to tackle them. The magnitude of this immense challenge was wisely recognized by the U.S. Congress and two administrations since 2009 when two programs designed to reinvigorate nuclear education in the U.S. were inaugurated: The IUP and the DOE NEUP. The Blue Ribbon Commission likewise recognized the importance of U.S. leadership in the nuclear area, and highlighted continued innovation in nuclear technology and workforce development as one of its eight major recommendations. The Nuclear Uniform Curriculum Programs at community colleges and programs that will improve craft training and apprentice programs with labor are also of great importance.

A decade ago Federal investment in R&D and nuclear education infrastructure was administered by DOE-NE. Support through scholarships, fellowships, equipment grants, research reactor upgrades, etc. was crucial to stemming the precipitous decline in the 1990's of nuclear academic programs and university research reactors. In 2008, foreseeing an impending nuclear human resource crisis fueled by an aging workforce and the rising prospect of mass retirements in all sectors of the nuclear industry, the DOE-NE created NEUP that directed approximately 20 percent of DOE-NE R&D funding towards universities in support of DOE-NE's research mission. In 2009 the IUP was created by the Congress to instill some degree of stability and coordination in the funding stream of nuclear education by providing sponsorship to the three Federal agencies: DOE-NE, DOE-NNSA, and the U.S. NRC. These three arms of IUP were directed to support broad educational objectives via programmatic and non-programmatic awards, and to coordinate their support mechanisms in order to minimize duplication.

In the ensuing years these support schemes have succeeded in reviving nuclear academia, and expanded interest in nuclear research topics into other supporting disciplines such as material science, mechanical engineering, radiochemistry, and a number of others, leading to a fertile interdisciplinary research environment in support of the Nation's research agenda.

All awards made via NEUP and IUP are competitive and have seen broad participation from individuals and institutions across the Nation. To be specific, the NRC invested its share of IUP in curriculum development grants, Junior Faculty Development grants, scholarships and fellowships awarded to selected universities, and in support of community colleges. DOE-NNSA now dedicates its support to the funding of the Nuclear Science and Security Consortium led by the University of California, Berkeley, and provides awards in programmatic support of basic research projects relevant to nuclear security.

The DOE-NE administers IUP through the NEUP in two separate funding streams. First, NEUP funds scholarships and fellowships awarded directly to student applicants. This program is distinct in its objectives from NRC's scholarship and fellowship program whose grants are awarded to academic institutions which then make them available to qualified matriculating students. Both DOE and NRC programs have been successful in attracting top talent to the field through these avenues. The NRC program also allows recruitment of high quality faculty who will ensure a stream of well-prepared young talent for innovative breakthroughs. In addition, DOE-NE has committed up to 20 percent of its R&D funds to support universities via competitive awards of varying levels of programmatic relevance. Some of these funds have been awarded in support of nuclear infrastructure at U.S. universities.

To appreciate the importance of IUP for the revival of nuclear engineering academia in the US we note that the elements of IUP cover the three primary missions of a research intensive university: education (undergraduate and graduate), research, and service. In the 4 years since its inception, the IUP has substantially contributed to the reversal in enrollment decline that dominated all the academic institutions a decade ago, even after the Fukushima event. Sustaining the IUP sends a clear message to university administrators for the need to support nuclear programs and to prospective students that their career investment in this field is desirable and will be rewarded.

In conclusion, we believe that Federal funding has been instrumental in revitalizing nuclear academic programs and in giving impetus to several universities to start new nuclear programs. Continued funding support for Federal programs aimed at educating and training the next generation of nuclear professionals needed by Federal agencies, national laboratories, universities, and industry is crucial towards a long-term national energy plan that includes a comprehensive nuclear energy R&D funding strategy supporting basic research, applied research and deployment. Continued funding support is also crucial to maintain the U.S leadership in the safe, secure, safeguarded use of nuclear technology as more new countries start expanding their use of this technology. U.S. engineers, scientists and technologists have historically set the gold standard in these three areas. With your support, our NEDHO academic programs will be able to provide the next generation of expert personnel that is essential for us to continue to do so in the future.

PREPARED STATEMENT OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS
(SIAM)

SUMMARY

This written testimony is submitted on behalf of the Society for Industrial and Applied Mathematics (SIAM) to ask you to continue your support of the Department of Energy (DOE) Office of Science in fiscal year 2014 at the highest possible funding level. In particular, we urge you to provide robust support for the Applied Mathematics Program within the Office of Advanced Scientific Computing Research (ASCR) within the Office of Science. We also emphasize the importance of support for graduate students, post-doctoral fellows, and early career researchers.

WRITTEN TESTIMONY

We are Dr. Irene Fonseca, President, and Dr. David Levermore, Vice President for Science Policy, of the Society for Industrial and Applied Mathematics (SIAM). On behalf of SIAM, we are submitting this written testimony for the record to the Subcommittee on Energy and Water Development of the Committee on Appropriations of the U.S. House of Representatives.

SIAM has approximately 14,000 members, including applied and computational mathematicians, computer scientists, numerical analysts, engineers, statisticians, and mathematics educators. They work in industrial and service organizations, universities, colleges, and government agencies and laboratories all over the world. In addition, SIAM has over 500 institutional members-colleges, universities, corporations, and research organizations. SIAM members come from many different disciplines, but have a common interest in applying mathematics in partnership with computational science towards solving real-world problems.

First, we would like to emphasize how much SIAM appreciates your Committee's continued leadership on and recognition of the critical role of the Department of Energy (DOE) Office of Science and its support for mathematics, science, and engineering in enabling a strong U.S. economy, workforce, and society. DOE was one of the first Federal agencies to champion computational science as one of the three pillars of science, along with theory and experiment, and SIAM deeply appreciates and values DOE activities.

Today, we submit this testimony to ask you to continue your support of the DOE Office of Science in fiscal year 2014 and beyond. In particular, we request that you provide the Office of Science with \$5.15 billion for fiscal year 2014. SIAM is aware of the significant fiscal constraints facing the Administration and Congress this year, but we note that, in the face of economic peril, Federal investments in mathematics, science, and engineering remain crucial as they help to maintain U.S. pre-eminence in innovation, upon which our economy and fiscal health depend.

THE ROLE OF MATHEMATICS IN MEETING ENERGY CHALLENGES

The Nation faces critical challenges in energy, including in energy efficiency, renewable energy, improved use of fossil fuels and nuclear energy, future energy sources, and reduced environmental impacts of energy production and use. As DOE and the research community design a long-term strategy to tackle these issues, the tools of mathematics and computational science (theory, modeling, and simulation) have emerged as a central element in designing new materials, predicting the impact of new systems and technologies, and better managing existing resources. Already, mathematical and computing researchers in universities, national laboratories, and industry are providing insights that propel advances in such fields as nanotechnology, biofuels, genomics, climate modeling, and materials fabrication.

To tackle many of these challenges, DOE must be able to understand complex systems such as the US power grid, the dispersion of nuclear radiation after a disaster, and the Earth's climate system. These and other complex systems have high levels of uncertainty, lack master plans, and are susceptible to breakdowns that could have catastrophic consequences. Understanding complex systems helps mitigate these risks and facilitate the development of controls and strategies to make systems more efficient.

DEPARTMENT OF ENERGY OFFICE OF SCIENCE

Activities within ASCR play a key role in supporting research that begins to fulfill the needs described above. Particularly critical programs include: the Applied Mathematics program, the Scientific Discovery through Advanced Computing (SciDAC) program, and programs to maintain the pipeline of the mathematical workforce. SIAM urges increased support for the Mathematical, Computational, and Computer

Sciences Research activity programs to restore balance between research activities and facility investments.

SIAM supports Office of Science plans to fund research to manage ever-growing data volumes in science. The explosion in data available to scientists from advances in experimental equipment, simulation techniques, and computer power is well known, and applied mathematics has an important role to play in developing the methods and tools to translate this shower of numbers into new knowledge.

SIAM also supports balanced funding for research to develop exascale computing, noting that investments in algorithm research and software development are essential to developing the next generation of high performance computers, realizing the full benefits of these new machines, and transferring those capabilities to industry for broad economic benefit.

SUPPORTING THE PIPELINE OF MATHEMATICIANS AND SCIENTISTS

Investing in the education and development of young scientists and engineers is a major step that the Federal Government can take to ensure the future prosperity and welfare of the U.S. Currently, the economic situation is negatively affecting the job opportunities for young mathematicians—at universities, companies, and other research organizations. It is not only the young mathematicians who are not being hired who will suffer from these cutbacks. The research community at large will suffer from the loss of ideas and energy that these graduate students, postdoctoral fellows, and early career researchers bring to the field, and the country will suffer from the lost innovation.

Maintaining the pipeline of the mathematical workforce with programs that fund research and students is especially important because of the foundational and cross-cutting role that mathematics and computational science play in sustaining the Nation's economic competitiveness and national security, and in making substantial advances on societal challenges such as energy. DOE programs support the educational and professional development of the researchers at universities, companies, and the national laboratories who will tackle the research problems needed to change energy usage in this country.

Within the Office of Advanced Scientific Computing Research, the Computational Science Graduate Fellowship program is a highly successful and model program that enables students to receive robust training in mathematics and while also learning how their research translates to other scientific areas of national importance. The program is unique in that it provides students with a prolonged research experience at one of DOE's laboratories to focus on the agency's cross-cutting computational and high performance computing research agendas. We request that strong support for this program continue, as well as ongoing support for post-doctoral fellows at DOE national laboratories and universities.

SIAM is concerned about the Administration's proposed redirection of this program into the National Science Foundation's larger graduate fellowship education initiatives for fiscal year 2014 and expresses concerns in maintaining the integrity of the program with this consolidation. We urge the Committee to conduct oversight on this consolidation while the Administration prepares more details on its decision and plans for the program going forward.

CONCLUSION

The programs in the Office of Science, particularly those discussed above, are important elements of DOE's efforts to fulfill its mission. They contribute to the goals of dramatically transforming our current capabilities to develop new sources for renewable and low-carbon energy supplies and improve energy efficiency to ensure energy independence and facilitate DOE's effort to increase U.S. competitiveness by training and attracting the best scientific talent into DOE headquarters and laboratories, the American research enterprise, and the clean energy economy.

We would like to conclude by thanking you again for your ongoing support of the DOE Office of Science and the actions you have already taken to enable DOE and the research and education communities it supports, including thousands of SIAM members, to undertake the activities that contribute to the health, security, and economic strength of the U.S. The DOE Office of Science needs sustained annual funding to maintain our competitive edge in science and technology, and therefore we respectfully ask that you continue your support of these critical programs.

We appreciate the opportunity to provide testimony to the Committee on behalf of SIAM and look forward to providing any additional information or assistance you may ask of us during the fiscal year 2014 appropriations process.

PREPARED STATEMENT OF THE UNIVERSITIES RESEARCH ASSOCIATION, INC.

Chairman Feinstein, Ranking Member Alexander, members of the Committee, on behalf of Universities Research Association, Inc. (URA), I appreciate this opportunity to comment on the upcoming fiscal year 2014 budget for the Department of Energy (DOE). URA is a non-profit organization comprised of 86 of the Nation's premier research universities. With the University of Chicago, through the Fermi Research Alliance, LLC (FRA), we are the DOE contractor for the management and operation of the Fermi National Accelerator Laboratory (Fermilab).

I write to express grave concern for the future of fundamental research in the physical sciences in light of the continuing decline in Federal investments in high energy and particle physics research. Scientific research is critical to innovation, and forms the foundation for job creation, economic growth, and global competitiveness. Studies have demonstrated unequivocally double-digit percent returns on the Nation's investments in fundamental discovery research. Once in an unquestioned lead role across all fields of research, the U.S. now faces significant competition from other countries, like China, that fully understand the importance of investment in basic science and technology for economic growth.

URA appreciates and supports the President's commitment to fund the DOE Office of Science at \$5.15 billion annually. But URA must again express its concern over the President's recommendation for the High Energy Physics (HEP) program and other elements of the Nation's portfolio of funding for basic research. The HEP program, as an example, has been proposed for reductions in funding over the past several years. Investment in high energy and particle physics in particular has been in decline over the past several years, even while the overall budget of the Office of Science has grown. The President's proposed allocation of these funds has resulted in an imbalance in the portfolio of basic research that underpins the missions of the Department and contributes to sustained national growth and well-being.

Such reductions have resulted in a dramatic cut for Fermilab in Illinois, the Nation's only remaining national laboratory devoted to high energy physics research. The current Continuing Resolution is expected to result in a reduction of approximately \$35 million (9 percent) below last year's funding level for Fermilab. To adjust to the lower estimate of the budget for Fermilab based on the President's budget request of last year alone, Fermilab had to reduce its workforce by approximately 80 FTEs, a reduction that included highly skilled technical staff across the laboratory. Over the past 3 years, Fermilab's staff has been decreased by about 180 FTEs (9 percent) to accommodate budget reductions and the need for some increased investment in facilities underpinning future experiments.

These reductions are proposed at a time when, to ensure that it continue to be among the world's leaders in global research and discovery, the United States should be reinvesting in High Energy Physics (HEP) and Fermilab. HEP is the only field within the DOE Office of Science to have already consolidated its portfolio and closed projects early (e.g. the B-Factory at Stanford University). It shut down its major operations at Fermilab's Tevatron accelerator in September 2011, even when the overwhelming recommendation of the HEP community, including several Nobel Laureates, was to continue operations for three additional years. Nevertheless, Fermilab proceeded to squeeze existing budgets to redirect funding to new, exciting, world-leading science. After intensive and careful planning, Fermilab is now fully ready to begin new experiments that will put the United States at the forefront of studies of neutrinos, a key area of study to better understand the Standard Model of Particle Physics and how the universe began.

Unfortunately, the savings achieved by the shutdown of the Tevatron are not being reinvested in the United States' preeminent physics laboratory at Fermilab, which has had little capital investment for more than a decade. The most damaging proposed cut in the President's recent budget request is to the Long Baseline Neutrino Experiment (LBNE). Budgets submitted proposed to cut this program by more than half, from about \$25 million to \$10 million, limit funding to research only, and halt the program engineering and design (PED) work, the planning phase of the project. Should this proposal be submitted to Congress and enacted, the expertise of the LBNE team and momentum on the project would be lost.

HEP has blazed the path of international cooperation on large scientific projects with scientists collaborating on the planning, design, construction, and operation of facilities all over the world. The field hosts thousands of researchers each year at its various experiments, and serves as a premier training ground for American university students to develop the next generation of scientists, engineers, and technicians to carry out discovery science and innovation. The field of HEP has, more than any other, demonstrated and preserved through the years its ability to organize and execute highly technical and demanding, first-of-a-kind, large engineering and con-

struction projects. Maintaining U.S. capability to carry out such large projects is itself in the Nation's vital interest. Moreover, HEP, and Fermilab in particular, have long reached out to K-12 students to engage their interest in the STEM (science, technology, engineering, and mathematics) fields, which are so important to the future economic competitiveness of the Nation. Europe, Japan, and China welcome U.S. researchers to their facilities, and for decades there has been a balanced international program with exceptional collaboration in this field, as characterized by thousands of foreign participants at Fermilab over the years.

Fermilab is working to develop partnerships with other nations to strengthen such collaborations and pursue international contributions to major experiments, such as LBNE. LBNE will be Fermilab's flagship experiment for the next 20 years and the foremost neutrino facility in the world. It has been structured in phases and has passed the Critical Decision (CD)-1 phase. There is strong interest from the European scientific community and India to collaborate on this project and contribute funding to it. But with diminishing DOE investment in the most basic research and the proposed suspension of planned work on LBNE, sustaining these relationships will be most challenging.

The America COMPETES Act, reauthorized by Congress in December 2010, affirmed a bipartisan commitment to double the science budgets of DOE and NSF over the next 10 years. Funding for research in the physical sciences, in constant dollars, has been essentially flat since 1989. We recognize the urgency of the Nation's current budget situation. But the economic and employment growth needed to deal with it over the long term is not achievable without the sustained, long term support of the innovation and research in which the physical sciences play a key role.

As an organization representing 86 universities in partnership to operate and manage Fermilab, URA urges the subcommittee to support funding for High Energy Physics within an overall balanced research program in the basic physical sciences within the Office of Science, and to restore funding to High Energy Physics and priority projects at Fermilab, including LBNE, as a key element of our country's investment in this core discipline of discovery science.

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PREPARED STATEMENT OF THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT

My name is David Modeer, and I am the General Manager of the Central Arizona Project. On behalf of the Central Arizona Water Conservation District (CAWCD), I encourage you to include \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Program for the Colorado River Basin in the fiscal year 2014 Appropriation bill. Continued funding for the Basin-wide Program, which supports salinity control projects, will help protect the water quality of the Colorado River that is used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres in the United States.

CAWCD manages the Central Arizona Project, a multi-purpose water resource development and management project that delivers Colorado River water into central and southern Arizona. The largest supplier of renewable water in Arizona, CAP diverts an average of over 1.6 million acre-feet of Arizona's 2.8 million acre-foot Colorado River entitlement each year to municipal and industrial users, agricultural irrigation districts, and Indian communities.

Our goal at CAP is to provide an affordable, reliable and sustainable supply of Colorado River water to a service area that includes more than 80 percent of Arizona's population.

These renewable water supplies are critical to Arizona's economy and to the economies of Native American communities throughout the State. Nearly 90 percent of economic activity in the State of Arizona occurs within CAP's service area. CAP also helps the State of Arizona meet its water management and regulatory objectives of reducing groundwater use and ensuring availability of groundwater as a supplemental water supply during future droughts. Achieving and maintaining these water management objectives is critical to the long-term sustainability of a State as arid as Arizona.

Negative Impacts of Concentrated Salts

Natural and man-induced salt loading to the Colorado River creates environmental and economic damages. EPA has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. With the significant Federal ownership in the Basin, most of this comes from federally administered lands. Human activity, principally irrigation, adds to salt load of the Colorado River. Further, natural and human activities concentrate the dissolved salts in the River.

The U.S. Bureau of Reclamation (Reclamation) has estimated the current quantifiable damages at about \$376 million per year to U.S. users with projections that damages would increase to more than \$500 million by 2030 if the program were not to continue. These damages include:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector,
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal sector,
- a reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector,
- an increase in the cost of cooling operations and the cost of water softening, and a decrease in equipment service life in the commercial sector,
- an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector,
- a decrease in the life of treatment facilities and pipelines in the utility sector, and
- difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins.

Adequate funding for salinity control will prevent the water quality of the Colorado River from further degradation and avoid significant increases in economic damages to municipal, industrial and irrigation users.

History of the Colorado River Basin Salinity Control Program

Recognizing the rapidly increasing salinity concentration in the Lower Colorado River and its impact on water users, Arizona joined with the other Colorado River Basin States in 1973 and organized the Colorado River Basin Salinity Control Forum (Forum). In 1974, in coordination with the Department of the Interior and the U.S. State Department, the Forum worked with Congress in the passage of the Colorado River Basin Salinity Control Act (Act) to offset increased damages caused by continued development and use of the waters of the Colorado River. Title I of the Salinity Control Act deals with the United States' commitment to the quality of water being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to the U.S. users.

In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act and created Reclamation's Basinwide Program. Under this program, Reclamation funds competitive proposals which will decrease the salt load to the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. States provide a 30 percent cost share of the projects implemented by Reclamation.

The threat of salinity continues to be a concern in both the United States and Mexico. Most recently, on November 20, 2012, a five year agreement, known as Minute 319, was signed between the U.S. and Mexico to guide future management of the Colorado River. Among the key issues addressed in Minute 319 included an agreement to maintain current salinity management and existing salinity standards. The CAWCD and other key water providers are committed to meeting these goals.

Conclusion

Implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River. In fact, the salt load of the Colorado River has now been reduced by roughly 1.2 million tons annually, reducing salinity in the Lower Basin by more than 100 ppm. However, shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The Plan of Implementation, as adopted by the States and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030, or approximately 20,000 tons of new control each year. Therefore, additional funding is required in 2014 to meet this goal and prevent further degradation of the quality of the Colorado River with a commensurate increase in downstream economic damages.

CAWCD urges the subcommittee to include \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Program for the Colorado River Basin in the fiscal year 2014 Appropriation bill. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

Waters from the Colorado River are used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres in the United States. Natural and man-induced salt loading to the Colorado River creates environmental and economic damages. The U.S. Bureau of Reclamation (Reclamation) has estimated the current quantifiable damages at about \$376 million per year. Congress authorized the Colorado River Basin Salinity Control Program (Program) in 1974 to offset increased damages caused by continued development and use of the waters of the Colorado River. Modeling by Reclamation indicates that the quantifiable damages would rise to approximately \$577 million by the year 2030 without continuation of the Program. Congress has directed the Secretary of the Interior to implement a comprehensive program for minimizing salt contributions to the Colorado River. Reclamation serves as the lead Federal agency in implementing the Program. Reclamation primarily institutes salinity control through its Basinwide Program. Funding levels have fallen behind in recent years, and a funding level of \$15.4 million is required in 2014 to prevent further degradation of the

quality of the Colorado River with a commensurate increase in downstream economic damages.

EPA has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. The majority of land within the Colorado River Basin is federally owned and administered. In implementing the Colorado River Basin Salinity Control Act (Act) in 1974, Congress recognized that most of the salt load in the Colorado River originates from federally owned lands. Title I of the Salinity Control Act deals with the United States' commitment to the quality of waters being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to U.S. users. This testimony deals specifically with the Title II efforts.

In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act and created Reclamation's Basinwide Program. Under this program, Reclamation funds competitive proposals which will decrease the salt load to the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. It is more efficient for Reclamation to perform the off-farm distribution system improvements prior to NRCS treating the on-farm acres with salinity control practices (i.e., Reclamation should pipe a canal or lateral prior to NRCS putting a pressurized sprinkler system on farm). Shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The funding amounts identified above and in the graph on the previous page are required to get the Basinwide Program back on pace with the overall Program implementation needs.

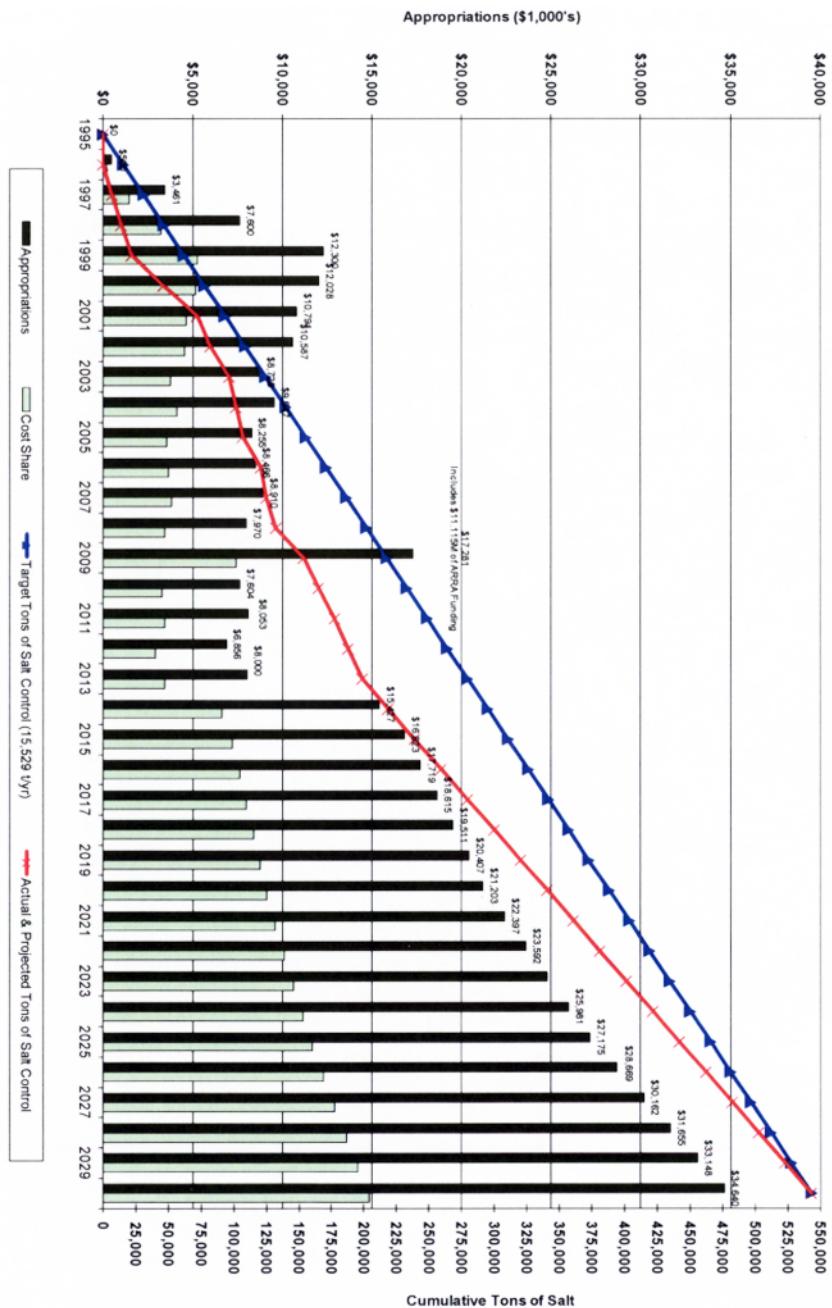
Concentration of salt in the Colorado River causes approximately \$376 million in quantified damages and significantly more in unquantified damages in the United States and results in poor water quality for United States users. Damages occur from:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector,
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal sector,
- a reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector,
- an increase in the cost of cooling operations and the cost of water softening, and a decrease in equipment service life in the commercial sector,
- an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector,
- a decrease in the life of treatment facilities and pipelines in the utility sector, and
- difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins.

The Colorado River Basin Salinity Control Forum (Forum) is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum is charged with reviewing the Colorado River's water quality standards for salinity every 3 years. In so doing, it adopts a Plan of Implementation consistent with these standards. The Plan of Implementation, as adopted by the States and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030, or approximately 20,000 tons of new control each year. Based on current cost levels, Reclamation's funding under its Basinwide Program needs to be \$15.4 million in fiscal year 2014. The level of appropriation requested in this testimony is in keeping with the adopted Plan of Implementation. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

Shown in the following graph are the historic funding levels for Reclamation's Basinwide Program up through fiscal year 2013 and needed funding levels for fiscal year 2014 through 2030 with the black bars showing the appropriated amount and the green bar showing the commensurate cost share. Shown with the blue line is the initial target of salinity control while the red line shows the actual control up through fiscal year 2013 and the required control from fiscal year 2014 through fiscal year 2030.

Basinwide Program: Controlling 20,286 tons salt/per year Beginning Fiscal Year 2014



In summary, implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River and is an essential component to the overall Colorado River Basin Salinity Control Program. Continuation of adequate funding levels for salinity within this program will prevent the water quality of the Colorado River from further degradation and significant increases in economic damages to municipal, industrial and irrigation users. A modest investment in source control pays huge dividends in improved drinking water quality to nearly 40 million Americans.

PREPARED STATEMENT OF THE COLORADO RIVER BOARD OF CALIFORNIA

This testimony is in support of fiscal year 2014 funding for the Department of the Interior for the Title II Colorado River Basin Salinity Control Act of 1974 (Public Law 93-320). In the Act, Congress designated the Department of the Interior, Bureau of Reclamation (Reclamation) to be the lead agency for salinity control in the Colorado River Basin. For nearly twenty-nine years this very successful and cost-effective program has been carried out pursuant to the Colorado River Basin Salinity Control Act and the Clean Water Act (Public Law 92-500). California's Colorado River water users are presently suffering economic damages in the hundreds of millions of dollars per year due to the River's salinity.

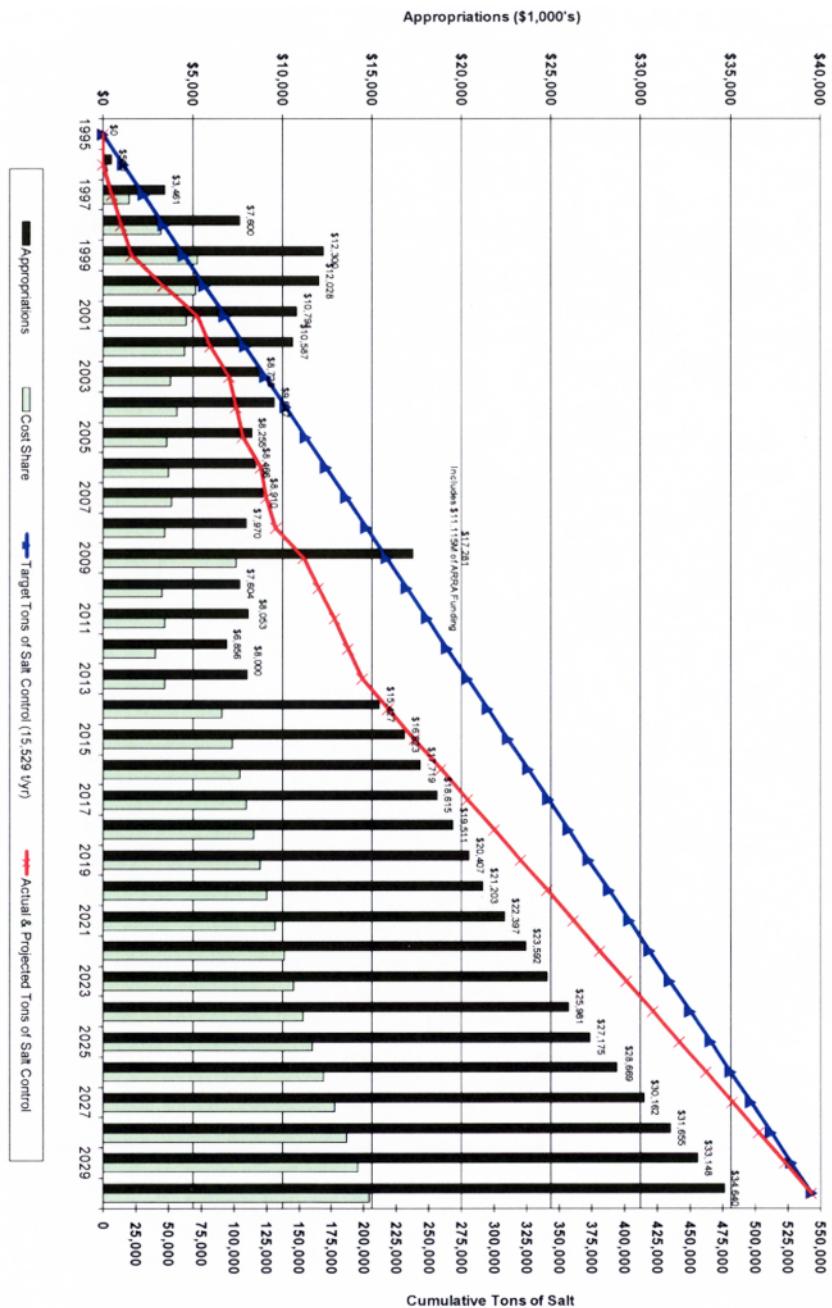
The Colorado River Board of California (Colorado River Board) is the State agency charged with protecting California's interests and rights in the water and power resources of the Colorado River system. In this capacity, California participates along with the other six Colorado River Basin States through the Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin States' salinity control efforts. In close cooperation with the U. S. Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act, the Forum is charged with reviewing the Colorado River's water quality standards every 3 years. The Forum adopts a Plan of Implementation consistent with these water quality standards. The level of appropriation being supported by this testimony is consistent with the Forum's 2011 Plan of Implementation for continued salinity control efforts within the Colorado River Basin. The Forum's 2011 Plan of Implementation can be found on this website: <http://www.coloradoriversalinity.org/docs/2011%20REVIEW-October.pdf>. If adequate funds are not appropriated to Reclamation's Basin-wide Program, significant damages associated with increasing salinity concentrations of Colorado River water will become more widespread in the United States and Mexico.

The 2011 Plan of Implementation, as adopted by the States and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030, or approximately 20,000 tons of additional salinity control measures each year. Based on current program cost levels, Reclamation's funding under its Basinwide Program needs to be at least \$15.4 million. This level of appropriation requested in this testimony is in keeping with the adopted 2011 Plan of Implementation.

Waters from the Colorado River are used by approximately 35 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres of agricultural lands in the United States. Currently, the salinity concentration of Colorado River water causes about \$376 million in quantifiable damages in the United States annually. Economic and hydrologic modeling by Reclamation indicates that the quantifiable damages could rise to more than \$577 million by the year 2030 without the continuation of Basin-wide salinity control measures as identified in the 2011 Plan of Implementation. Significant un-quantified damages also occur. For example, damages occur from:

- A reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector;
- A reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector;
- An increase in the use of water for cooling, and the cost of water softening, and a decrease in equipment service life in the commercial sector;
- An increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector;
- A decrease in the life of treatment facilities and pipelines in the utility sector;
- Difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, an increase in desalination and brine disposal costs due to accumulation of salts

Basinwide Program: Controlling 20,286 tons salt/per year Beginning Fiscal Year 2014



in groundwater basins, and fewer opportunities for recycling and reuse of the water due to groundwater quality deterioration; and

—Increased use of imported water for leaching and the cost of desalination and brine disposal for recycled water.

Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems in a coordinated fashion with the activities of the U.S. Department of Agriculture's (USDA) programs working with land-owners to improve on-farm irrigation systems. With the USDA's Environmental Quality Incentive Program (EQIP), more on-farm funds are available and it continues to be important to ensure that there are adequate Reclamation funds available to maximize Reclamation's effectiveness in addressing water delivery system improvements. Shortfalls in recent Basinwide Program funding have led to inefficiencies in the implementation of the overall salinity control program. The funding amount identified above and in the graph on the previous page are required to get the Basinwide Program back on pace with the implementation schedule identified in the 2011 Plan of Implementation.

In addition, the Colorado River Board recognizes that the Federal Government has made significant commitments to the Republic of Mexico and to the seven Colorado River Basin States with regard to the delivery of quality water pursuant to the 1944 Water Treaty with Mexico. In order for those commitments to be honored, it is essential that in fiscal year 2014, and in future fiscal years, that Congress provide funds to the Bureau of Reclamation for the continued operation of current projects.

The Colorado River is, and will continue to be, a major and vital water resource to the nearly 20 million residents of southern California, including municipal, industrial, and agricultural water users in Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial counties. The protection and improvement of Colorado River water quality through an effective salinity control program will avoid the additional economic damages to users in California and the other States that rely on the Colorado River.

PREPARED STATEMENT OF THE IRRIGATION & ELECTRICAL DISTRICTS ASSOCIATION OF ARIZONA

The Irrigation & Electrical Districts Association of Arizona (IEDA) is pleased to present written testimony regarding fiscal year 2014 appropriations for the Bureau of Reclamation (Reclamation) and the Western Area Power Administration (Western).

IEDA is an Arizona nonprofit association whose 25 members and associate members receive water from the Colorado River directly or through the facilities of the Central Arizona Project (CAP) and purchase hydropower from Federal facilities on the Colorado River either directly from Western or, in the case of the Boulder Canyon Project, from the Arizona Power Authority, the State agency that markets Arizona's share of power from Hoover Dam. IEDA was founded in 1962 and continues in its 51st year to represent water and power interests of Arizona political subdivisions and other public power providers and their consumers.

BUREAU OF RECLAMATION

IEDA has reviewed the Reclamation Budget released last month and Commissioner Connors' filed testimony. We are concerned that Reclamation's Budget does not anticipate the increased time demand that the agency will face in fiscal year 2014 due to Congress' action in passing small hydropower legislation. Only yesterday, the Senate Energy & Natural Resources Committee unanimously approved S. 306 and H.R. 678. Reclamation needs to be ready to implement this Congressional directive. We are likewise concerned that the fiscal year 2014 budget does not adequately address the enormous backlog of needs of the agency's aging infrastructure. We support the important projects and programs that have been included in prior budgets and are included in the fiscal year 2014 budget. We are especially mindful that the Yuma Desalting Plant is an essential element of the problem solving mechanisms being put in place for the Colorado River and especially the Lower Colorado River. Problem solving on the Lower Colorado River will be substantially improved by using the plant as a management element, in conjunction with the new arrangements with the Republic of Mexico contained in Minute 319 to the 1944 Treaty.

We also wish to call to the subcommittee's attention several other issues of concern to us and to other Arizona water and power customers:

First, we want to congratulate Congress for extending the Upper Colorado River Recovery Implementation Plan. That Plan focuses on recovering three (3) endan-

gered fish in the Colorado River and its tributaries above Lake Powell. It is a three party agreement: Federal agencies with appropriations, monies from the four Upper Colorado River Basin States (Colorado, New Mexico, Utah and Wyoming), and power revenues from our members and other Colorado River Storage Project customers. Without the extension there could be no Federal appropriation dollars to continue the program. Passage of the bill honors the "deal" that we cut to keep the Endangered Species Act (ESA) from being used to attack our water and hydropower resources. No money, no Plan. We support Reclamation's request for appropriations and hope that the subcommittee recognizes that the Plan is an essential and beneficial Colorado River partnership.

Second, we continue to be concerned about Reclamation's spending on post-9/11 security costs. Congress gave Reclamation specific directions on this subject several years ago. That included non-reimbursability of certain costs. However, Congress did not instruct Reclamation with regard to how this program should be implemented. In a new age of cyber crime and cyber espionage, facility and operational security are very important. We believe a close review of the ongoing levels of staffing and other expenses related to this subject is in order.

WESTERN AREA POWER ADMINISTRATION

IEDA is also concerned that the budget for the Western Area Power Administration once again includes only limited appropriations for construction funding proposed for fiscal year 2014. We believe this shortfall is unfortunate. Western has over 17,000 miles of transmission line for which it is responsible. It has on the order of 14,000 megawatts of generation being considered for construction that would depend on that Federal network. The existing transmission facilities cannot handle all of these proposals. Just as importantly, these facilities are requiring increased investment for repairs and replacements. Moreover, the region is projected, by all utilities operating in the region, to be short of available generation in the ten-year planning window that utilities and Western use.

The appropriation request in this category will not come even close to addressing existing transmission construction needs. Repairs and replacements will have to be postponed and considerable hardships to local utilities that depend on this group of Federal networks are bound to occur. In Western's Desert Southwest Region, our region, work necessary just to maintain system reliability will have to be postponed. Customer contributions in the existing economic environment under existing legal restrictions will not keep pace with the need the longer the current situation goes on.

The President's Budget, once again, assumes that unmet capital formation needs will be made up by Western's customers. We would be the first to support additional customer financing of Federal facilities and expenses through the Contributed Funds Act authority under Reclamation law that is available to Western. However, programs utilizing significant non-Federal capital formation require years to develop. One such program that was proposed by the Arizona Power Authority in a partnership with Western died because it was enmeshed in bureaucratic red tape at the Department of Energy. There is no way that Western customers can develop contracts, have them reviewed, gain approval of these contracts from Western and their own governing bodies, find financing on Wall Street and have monies available for the next fiscal year. It is just impossible, especially in this economy. Moreover, scoring and "cut/go" rules are providing major disincentives for Western's customers and others in this regard.

There also are impediments to customers using existing Federal laws to provide non-Federal financing and Congress should examine them. Artificially assuming customer funding for construction, in lieu of real solutions, is bad public policy and should not be countenanced. We urge the subcommittee to restore a reasonable amount of additional construction funding to Western so it can continue to do its job in keeping its transmission systems functioning and completing the tasks that it has in the pipeline that are critical to its customers throughout the West.

While you are considering this subject, we hope you will ask Western for detailed information about the costs associated with running its headquarters, a significant amount of the administrative costs passed on to its customers. Western has been meeting with customers to discuss capital financing, but has rebuffed our requests for explanation of its central overhead.

There is one subject about which we urge you not to provide funding. On March 16, 2012, Secretary of Energy Chu announced that Western would be participating in a gigantic Energy Imbalance Market (EIM) in the western United States. This is an untested, unanalyzed, unproven boondoggle being promoted to force utilities in the West to add layer upon layer of bureaucracy over their existing operations,

when doing so elsewhere has only escalated electricity costs and hampered economic recovery. We urge you to expressly prohibit Western from expending funds to participate in this attack on the West's economy and to require peer-reviewed scientific and economic analysis before any money is spent to facilitate Western's participation in an EIM.

CONCLUSION

Thank you for the opportunity to submit this written testimony. If we can provide any additional information or be of any other service to the subcommittee, please do not hesitate to get in touch with us.

PREPARED STATEMENTS OF THE LOWER BRULE SIOUX RURAL WATER SYSTEM; OGLALA SIOUX RURAL WATER SUPPLY SYSTEM; AND THE ROSEBUD SIOUX RURAL WATER SYSTEM

FISCAL YEAR 2014 REQUEST

The Mni Wiconi Project respectfully requests \$13.0 million in appropriations for operation and maintenance (OMR) activities in fiscal year 2014, including \$1.5 million for the Bureau of Reclamation. This is the first year without a request for construction funding and assumes that the Bureau of Reclamation will make fiscal year 2013 funds available in amounts necessary to fully allocate the remaining, authorized construction ceiling.

OMR funds will be utilized by OSRWSS for regional core and distribution systems on the Pine Ridge Indian Reservation, by the Rosebud Sioux Tribe (RSRWS) on the Rosebud Indian Reservation and by the Lower Brule Sioux Tribe (LBRWS) on the Lower Brule Indian Reservation as summarized in Table 1.

TABLE 1.—MNI WICONI PROJECT FISCAL YEAR 2014 OMR FUNDING NEED

Cost Item	OSRWSS		RSRWS	LBSRWS	Reclamation	Total
	Core	Distribution				
Number of Employees	19	33	22	12	7.4	93.4
Labor and Fringe Benefits	\$1,175,614	\$1,487,990	\$1,135,565	\$734,700	\$651,355	\$5,185,224
Labor Overhead Costs	354,800	484,192	280,825	117,000	418,922	1,655,739
Non-Labor Costs:						
Electricity/Natural Gas/Propane	322,439	391,830	222,884	109,400	304,000	1,350,553
Telephone/Communications	32,137	42,833	21,115	27,600	.....	123,685
Water Treatment Chemicals/Supplies	321,368	87,975	53,560	86,000	11,000	559,903
Wells, Pumps, Motors & Replacement	160,684	109,762	95,400	75,300	.....	441,146
Water Testing	42,849	10,712	2,000	10,000	.....	65,561
Vehicle OMR	120,578	367,425	92,778	119,400	27,000	727,181
Water Service Providers .....	.....	.....	242,050	.....	.....	242,050
Travel & Training	39,635	63,000	17,880	46,600	38,000	205,115
Other	112,919	154,587	112,250	185,000	63,250	628,006
Extraordinary Replacements:						
Lagoon (part)	875,000	.....	.....	.....	.....	875,000
Phase I Pump and Motor Controls .....	.....	.....	100,000	.....	.....	100,000
Phase I and II PRV's .....	.....	.....	45,000	.....	.....	45,000
Pump, Treatment Membranes & Storage Tank .....	.....	.....	.....	215,000	.....	215,000
Priority Community System Upgrades:						
Valve and Tee Replacements, Pine Ridge .....	.....	299,400	.....	.....	.....	299,400
Valve and Hydrant Replacement, Antelope .....	.....	.....	316,759	.....	.....	316,759
Total	3,558,022	3,499,706	2,738,066	1,726,000	1,513,527	13,035,321

The OSRWSS Core system serves the three Indian Reservations and the West River/Lyman-Jones Rural Water System (WRLJ) in 9 counties off-reservation in southwestern South Dakota.

Public Law 100-516, as amended, our authorizing legislation, found that:

". . . the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply, and public health needs of the Pine Ridge Indian Reservation, Rosebud Indian Reservation and Lower Brule Indian Reservation . . ."

and declared the purpose of the Mni Wiconi Project to

". . . (1) ensure a safe and adequate municipal, rural, and industrial water supply for the residents of the Pine Ridge Indian Reservation, Rosebud Indian Reservation and Lower Brule Indian Reservation in South Dakota,"

"(2) assist the citizens of Haakon, Jackson, Jones, Lyman, Mellette, Pennington, and Stanley Counties, South Dakota, to develop safe and adequate municipal, rural, and industrial water supplies;"

The request as presented in Table 1 will meet the purposes of the Act, and the budgeting by the Administration and the appropriation by Congress of adequate funds will fulfill the fiduciary responsibilities of the United States as articulated in the Act.

Authorized construction funds have been fully expended. Although construction of authorized components of (1) the Oglala Sioux Rural Water Supply System on the Pine Ridge Indian Reservation (OSRWSS) and (2) the Rosebud Sioux Rural Water Supply System on the Rosebud Indian Reservation (Rosebud RWS) has not been fully completed, no request for fiscal year 2014 construction funds is made. Efforts are underway to increase the authorized construction ceiling to complete the projects. Any requests for fiscal year 2014 construction funds will be advanced by the South Dakota Delegation.

The project has been treating and delivering more water each year from the OSRWSS Water Treatment Plant near Fort Pierre as construction has advanced in the service areas. Completion of significant core and distribution pipelines has resulted in more deliveries to more communities and rural users. The need for sufficient funds to properly operate and maintain the functioning system throughout the project has grown as the project has now reached 98 percent completion with 100 percent of the authorized construction funding. The OMR budget must be adequate to keep pace with the system that is placed in operation to protect and preserve the \$470 million investment of the United States in project facilities, which are held in trust by the United States with the exception of the West River/Lyman-Jones facilities.

Fiscal year 2014 is the first year that emphasis has shifted to operation, maintenance and replacement as the primary budgeting need. Budgeting and funding by the United States to ensure that aging features of the constructed project are protected is not only sensible but properly executes the responsibilities of the United States as trustee to the Indian people. While the budgeting by the Administration was adequate this year, budgeting has not been adequate in several of the past years. The concern is that aging components of critical project facilities will not be properly repaired and replaced due to budget limitations.

OSRWSS REGIONAL CORE FACILITIES

The attached map shows the Mni Wiconi Project completion status with full use of authorized funding, including the OSRWSS core facilities that serve the three Indian Reservations and the service area of West River/Lyman-Jones (WRLJ).

The staff of the OSRWSS core numbers 19 employees. The staff is a minimum number that are essential to operate and maintain the regional water treatment plant, 203 miles of main transmission pipeline from 12 inches to 27 inches in diameter, nine major pumping stations (4 Megawatt total capacity), nine reservoirs (4.2 million gallons of capacity) and supervisory control and data acquisition (SCADA) system, necessary to serve the OSRWS, RSRWS, LRSRWS and WRLJ service areas. As shown in Table 1, wages and fringe benefits totaled \$1.176 million. Average salaries are \$61,874 annually, including average fringe benefits of \$12,428 annually. Labor overhead totals \$354,800 annually.

Electrical and natural gas utilities have a projected cost of \$322,000 based on historical use and rates projected for 2014 from the service providers. The utilities provide wheeling services for heating, lighting and pumping at the water treatment plant and pumping stations. Electrical costs, except for wheeling services, are covered separately in the budget of the Bureau of Reclamation, which reimburses the Western Area Power Administration directly for power and energy costs.

Chemical costs are comparable in magnitude to the electrical and natural gas utilities at \$321,000 and are needed to treat water and ensure a safe drinking water supply for the three Indian and WR LJ distribution systems served by the OSRWSS

core system. Other major costs in the OSRWSS core budget include \$161,000 for pump and motor repair and replacement in the regional water treatment plant and \$121,000 for operation and repair of project vehicles.

The budget includes \$875,000 in extraordinary costs for expansion of the lagoon system at the regional water treatment plant. With experience in operation of the plant since 2005, the need for additional lagoon capacity has become clear. The total cost of the upgrade is \$1,750,000, and half of the funding is needed in fiscal year 2014. The balance will be requested in fiscal year 2015.

The Bureau of Reclamation can confirm that the budget for the OSRWSS core system was developed collaboratively and represents the expected costs of operation and maintenance in fiscal year 2014. The budget is 0.8 percent more than in fiscal year 2013.

OSRWSS DISTRIBUTION ON PINE RIDGE INDIAN RESERVATION

The staff of the OSRWSS Distribution (Department of Water Management and Conservation, DWMC) numbers 33 employees. The staff is the minimum number that are essential to operate and maintain over 379 miles of main transmission pipeline, 33 major pumping stations, reservoirs and SCADA system. As shown in Table 1, wages and fringe benefits totaled \$1.488 million. Average salaries are \$45,091 annually, including average fringe benefits of \$9,260 annually. Labor overhead totals \$484,192 annually.

Electrical and propane utilities have a projected cost of \$391,830 based on historical use and rates projected for 2014 from the power suppliers. The utilities provide for heating and lighting of the two on-reservation operations offices and 33 pumping stations.

Chemical costs are comparable to fiscal year 2013 amounts at \$89,975 with only slight increases associated with chloramines and the system expansion in fiscal year 2014. These investments are needed to ensure a safe drinking water supply for the 20,000 people living on the Pine Ridge Indian Reservation. Other major costs in the OSRWSS Distribution budget include \$109,762 for pump and motor repair and replacement in the local pump stations and well fields; and \$367,425 for operation and repair of project vehicles which are used in the field to operate and maintain the 379 miles of distribution piping.

The budget includes \$299,400 in costs for installing new valves and tees in the Pine Ridge Community water system. These upgrades are necessary to meet the criteria of the Bureau of Reclamation for transfer of title of the largest community system on the Pine Ridge Indian Reservation to OSRWSS. The total cost of the upgrade is \$600,000 and half of the funding is needed in fiscal year 2014 to match funds with the Indian Health Service and possibly Housing and Urban Development.

The Bureau of Reclamation can confirm that the budget for the OSRWSS Distribution system was developed collaboratively and represents the expected costs of the operation and maintenance in fiscal year 2014. The budget is 13 percent more than in fiscal year 2013.

The budget narrative of the Bureau of Reclamation in the last budget request included the following:

“. . . The project consists of new systems to be constructed, as well as 40 existing Mni Wiconi community systems. Responsibilities of the Secretary under the Act include the operation and maintenance of existing water systems and appurtenant facilities on the Pine Ridge, Rosebud, and Lower Brule Indian Reservations.”

The Bureau of Reclamation is requiring upgrades before “transferring” the 40 existing community systems into the Mni Wiconi Project, and “transfer”, according to the Bureau of Reclamation, is a condition of eligibility for operation, maintenance and replacement (OMR) budgeting by the Bureau of Reclamation. The Oglala Sioux Tribe believes that the Mni Wiconi Project does not fulfill the trust responsibility to the Tribe and its membership or the needs of the other residents of the Pine Ridge Indian Reservation without transfer of 20 existing communities to the Project in order to make those communities eligible for operation, maintenance and replacement funding. Therefore, the OSRWSS request for fiscal year 2014 includes a \$299,400 request that would replace valves in Pine Ridge Village that have been identified by the Bureau of Reclamation as needing replacement before transfer of the community systems to the Project.

The Committee is asked to consider the contradiction that the Bureau of Reclamation has created by its policy, namely that funding (\$10 million) outside the authority of the Mni Wiconi Project Act is required to repair and replace existing facilities in 20 communities on the Pine Ridge Indian Reservation before “transfer” to the Project; but the communities, which have existing systems that are functioning successfully at present, are not eligible for OMR funding until they are “transferred.”

The communities cannot receive OMR funding, according to the Bureau of Reclamation, until they are “transferred”, and OMR funding is needed to conduct the “Cadillac” repairs that Reclamation requires before “transfer.”

The modest request of \$299,400 for repairs to valves and related facilities in Pine Ridge Village in fiscal year 2014 will advance the largest community on the Pine Ridge Indian Reservation toward “transfer.”

ROSEBUD SIOUX RURAL WATER SYSTEM (RSRWS)

The staff of the RSRWS or Sicangu Mni Wiconi currently consists of 17 full-time equivalents. Many of these positions are shared with design and construction component of the Sicangu Mni Wiconi and after the completion of the construction phase of the project, the functions shared with the design and construction component will fall fully on the OM&R component. It is anticipated that there will be 22 full-time employees in fiscal year 2014. The staff is the minimum number needed to operate and maintain over 410 miles (over 390 existing and 20 to be constructed in fiscal year 2013) of mainline, 15 (14 existing and 1 to be constructed in fiscal year 2013) major pumping stations, 20 water storage reservoirs, 11 supply wells and associated chlorination facilities, and SCADA system. As shown in Table 1, wages and fringes total \$1,135 million. Average annual salaries are \$51,616, including average fringe benefits of \$15,494. Labor overhead totals \$280,825 annually.

Electrical and propane utilities have a projected cost of \$222,884 based on 1) historical use; 2) an increase in project pumping resulting from more surface water being pumped to Mission and Sicangu Village; and 3) anticipated power rates projected for 2014. The utilities provide for heating, lighting and power for the 15 pump stations and the RSRWS administrative building and shops.

Water treatment chemical costs and general supplies are comparable to fiscal year 2013 amounts and total \$53,560. System maintenance and repair includes routine maintenance and repair activities for pipelines, pump stations, storage tanks, pressure reducing valves and other appurtenances. At a total cost of \$95,400 it is comparable to fiscal year 2013. Water testing is a relatively low cost, at \$2,000 in part because the Tribe does much of the testing themselves. Vehicle operation and maintenance costs total \$92,778 which is only slightly more than the \$90,076 budgeted for fiscal year 2013.

The RSRWS budget includes water service contracts with the city of Mission and the Tripp County Water Users District (TCWUD) at a total cost of \$242,050. In 1995 the citizens of Mission voted to transfer their municipal system to the Mni Wiconi project and in 2003 a final agreement between the Tribe, city of Mission and Bureau of Reclamation was consummated and the former municipal system is now held in trust for the Tribe as part of the RSRWS. The inclusion and OM&R of the Mission system are authorized by Section 3A (a)(8) of the Mni Wiconi Project Act, as amended. The cost of the service contract is \$164,800 which is less than previous amounts because the delivery of surface water will reduce O&M costs associated with the groundwater supply. The second service contract, at \$77,250, is for providing water to tribal members on trust lands in the Secondary Service Area of Tripp and Gregory Counties. Other costs at \$112,250 include computer software license agreements, building and vehicle insurance, SCADA and engineering support.

Like the Oglala Sioux Tribe, the Rosebud Sioux Tribe believes that the authority of the authorizing legislation and trust responsibility of the United States are clear regarding the inclusion of existing systems in the RSRWS. After all, the majority of the service population relies on the existing systems to deliver water to their homes. Rosebud has included \$316,759 for the replacement of valves and fire hydrants in the Antelope community system. The cost estimate is based on the assessment completed by Reclamation in 2010 (adjusted for time using the Reclamation's Construction Cost Trend index) and is only for the highest priority items to ensure functionality of the system. \$145,000 is also requested for pump and motor control replacement on Phase I and pressure reducing valve replacement on Phases I and II. These components will be close to 20 years old and nearing the end of their service life.

LOWER BRULE RURAL WATER SYSTEM

The Lower Brule Rural Water System (LBRWS) is complete with all major components such as the water treatment plant, booster stations and tanks/reservoirs in full operation. As a result, LBRWS's operation and maintenance portion of the budget has reached a baseline amount to which only slight adjustments along with inflation should be made each year. The portion of the LBRWS OM&R budget that is somewhat variable is the Replacement Additions and Extraordinary (RAEX) maintenance items. However, booster stations and tanks that were constructed 15–16 years

ago are in need of routine maintenance and/or replacement. An increase in the amount of RAX funds provided in the budget is required to fund these functions. With that in mind, the LBRWS request for OM&R for fiscal year 2014 is \$1,726,000 which includes \$10,000 for pump replacement, \$100,000 for treatment plant membrane module replacement, \$80,000 to refurbish the Medicine Butte Ground Storage Reservoir, and \$25,000 in other miscellaneous upgrades. LBRWS will continue to work with the Bureau of Reclamation and the other sponsors to prioritize their needs and ensure that their system is operating to the standards that have been established over the past several years.

BUREAU OF RECLAMATION

The Bureau of Reclamation budget was based on fiscal year 2013 experience, and the Agency should be consulted for its fiscal year 2014 budget, which is not expected to vary significantly. Reclamation provides oversight of operation and maintenance activities for all tribal systems, including the employment of an equivalent 7.4 persons at a cost of \$1.070 million or an average \$145,000 per employee.

The second-most costly budget item of Reclamation after labor costs is the payment of power bills to the Western Area power Administration for demand and energy charges of \$304,000.

Mni Wiconi Rural Water Supply Project
"Water Is Life"

Mni Wiconi Rural Water Supply

Service Area: 1,400 square miles
Total New Pipeline: Miles: 4,400 Miles
Population Served: 52,000
Planning Through Construction year - Present
Project Sponsors:
Oglala Sioux Tribe
Reserve Sioux Tribe
West Sioux/Tamnay Sioux, Inc.
Lower Brule Sioux Tribe
Common Service Facilities
14 MGD Water Intake and Pump Facilities
14 MGD OSAWIS Core Pipeline
Supervisory Control and Data Acquisition
System (SCADA)

Operational Units Facilities for
Reserve Sioux Reservation
West Sioux/Tamnay Sioux, Inc.
Lower Brule Sioux Reservation
Mile Distribution Pipeline
Service Pipe
Service Connections
Water
Water Storage Reservoir
Pump Station

Intake and Water Treatment Plant

Water Supply Missouri River
River Child Reservoir
Intake Capacity: 14 MGD
Treated Water Capacity: 14 MGD
Water Treatment
Water Intake Reservoir
River Intake Reservoir
Water Treatment Station
Water Treatment and Pump Station
Production
Purification
Sedimentation
Disinfection
High Service Pumping
Storage Lagoon

OSAWIS Core Pipeline

12-inch to 24-inch High-Pressure Pipe
(Copper, stainless steel and PVC)
100 Miles Developed and Constructed
Common Production
SCADA System
Pump Station

MORRISON MAIERLE, Inc.

PREPARED STATEMENT OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California (Metropolitan) encourages the subcommittee's support for fiscal year 2014 Federal funding of \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Salinity Control Program for the Colorado River Basin.

The concentrations of salts in the Colorado River cause approximately \$376 million in quantified damages in the lower Colorado River Basin States each year and significantly more in unquantified damages. Salinity concentrations of Colorado River water are lower than at the beginning of Program activities by over 100 milligrams per liter (mg/L). Modeling by the U.S. Bureau of Reclamation indicates that the quantifiable damages would rise to more than \$577 million annually by the year 2030 without continuation of the Colorado River Basin Salinity Control Program (Program).

Water imported via the Colorado River Aqueduct has the highest level of salinity of all of Metropolitan's sources of supply, averaging around 630 mg/L since 1976, which leads to economic damages. For example, damages occur from:

- A reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector;
- A reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector;
- An increase in the cost of cooling operations, and the cost of water softening, and a decrease in equipment service life in the commercial sector;
- An increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector;
- A decrease in the life of treatment facilities and pipelines in the utility sector;
- Difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins, and fewer opportunities for recycling due to groundwater quality deterioration; and
- Increased cost of desalination and brine disposal for recycled water.

Concern over salinity levels in the Colorado River has existed for many years. To deal with the concern, the International Boundary and Water Commission signed Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River in 1973, and the President signed into law the Colorado River Basin Salinity Control Act in 1974 (Act). High total dissolved solids in the Colorado River as it enters Mexico and the concerns of the seven Colorado River Basin States regarding the quality of Colorado River water in the United States drove these initial actions. To foster interstate cooperation and coordinate the Colorado River Basin States' efforts on salinity control, the seven Basin States formed the Colorado River Basin Salinity Control Forum (Forum).

The salts in the Colorado River system are indigenous and pervasive, mostly resulting from saline sediments in the Basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system, and enter the River through both natural and anthropogenic sources.

The Program reduces salinity by preventing salts from dissolving and mixing with the River's flow. Irrigation improvements (sprinklers, gated pipe, lined ditches) and vegetation management reduce the amount of salt transported to the Colorado River. Point sources such as saline springs are also controlled. The Federal Government, Basin States, and contract participants spend over \$40 million annually on salinity control programs.

The Program, as set forth in the Act, benefits the Upper Colorado River Basin water users through more efficient water management, increased crop production, benefits to local economies through construction contracts and through environmental enhancements. The Program benefits the Lower Basin water users, hundreds of miles downstream from salt sources in the Upper Basin, through reduced salinity concentration of Colorado River water. California's Colorado River water users are presently suffering economic damages in the hundreds of millions of dollars per year due to the River's salinity.

In recent years, the Bureau of Reclamation Basin-wide Salinity Control Program funding has dropped to below \$8 million. In the judgment of the Forum, this amount is inappropriately low. Water quality commitments to downstream United States and Mexican water users must be honored while the Upper Basin States continue to develop their Compact apportioned waters from the Colorado River and its tributaries.

These Federal dollars will be augmented by the State cost sharing of 30 percent with an additional 25 percent provided by the agricultural producers with whom the U.S. Department of Agriculture contracts for implementation of salinity control measures. Over the past years, the Colorado River Basin Salinity Control program has proven to be a very cost effective approach to help mitigate the impacts of increased salinity in the Colorado River. Continued Federal funding of this important Basin-wide program is essential.

Metropolitan urges the subcommittee to support funding for the Colorado River Basin Salinity Control Program for fiscal year 2014 in the amount of \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Salinity Control Program.

PREPARED STATEMENT OF THE NATIONAL WATER RESOURCES ASSOCIATION

On behalf of the membership of the National Water Resources Association, I am writing to express our concern over the incremental reduction in funding for the U.S. Bureau of Reclamation's projects and programs over the past several years.

As you are aware, the Bureau operates 180 projects in 17 western States at an investment of over \$12 billion. These projects provide water to over one-third of the West's population and irrigate approximately 10 million acres of land. In addition, the Bureau's 53 power plants generate 40 billion kilowatts of electricity. The Reclamation Program represents arguably the most successful public-private partnership in our Nation's history. The infrastructure build pursuant to the Reclamation Act of 1902 and subsequent amending legislation was responsible for settlement of much of the western United States. That infrastructure is still vitally important to the economic viability of western lands.

It is difficult to make recommendations to the Committee without seeing what the Administration is proposing for fiscal year 2014. However, as previously states, the last several years has seen an alarming incremental reduction in the Bureau's budget. Last year, the Administration's budget request for the Bureau was made to look better by including projects and programs which were previously off budget, i.e. funding for work authorized by the Central Utah Project Completion Act and funding for various Indian water rights settlements. In reality, the Bureau experienced a significant decrease in project and program funding in the fiscal year 2013 budget request.

In order to maintain the operational integrity of the Bureau water and power infrastructure at peak efficiency, we recommend an increase in overall funding for fiscal year 2014 in the range of between 10 to 12 percent.

With respect to fiscal year 2014 funding of the U.S. Army Corps of Engineers Civil Works Program, we support the Committee's recommended level with consideration given to inclusion of the Central City, Trinity River Vision Project in Fort Worth, TX.

With respect to specific projects and programs, we would call the attention of the Committee to the following high priority line items:

U.S. BUREAU OF RECLAMATION

Colorado River Basin Salinity Control

Fiscal Year 2014 Request: \$15.4 Million DOI, \$1.4 Billion (EQIP finding) USDA

Waters of the Colorado River are used by approximately 40 million people and used to irrigate approximately 4 million acres in the United States. Higher salinity water creates environmental and economic damages. Present quantifiable damages are estimated by Reclamation to be several hundred million dollars with projections that they would climb to more than \$500 million annually by 2030 without continued aggressive implementation of the Program.

Congress has authorized implementation of the Colorado River Basin Salinity Control Program through the Colorado River Basin Salinity Control Act (Public Law 93-320) as amended. Implementation is accomplished through Department of the Interior and Department of Agriculture programs. In recognition of US water quality commitments to Mexico and the fact that the majority of the salt load of the Colorado River comes from federally administered lands, the Act directs that 70 percent of the Program is funded via appropriations with the remaining 30 percent basin States cost-share coming from the Basin Funds. The Program's Plan of Implementation identified in the 2011 Review, Water Quality Standards for Salinity, Colorado River System, as adopted by the basin States and EPA calls for approximately 650,000 tons of additional annual salinity control by 2030. The fiscal year 2014 funding level requirements are: \$15.4 million in Reclamation's Basinwide Program, \$1.5 million for salinity specific projects in BLM's Soil Water and Air Program, and

\$17.3 million under USDA's (NRCS) Environmental Quality Incentives Program (EQIP), total EQIP funding being \$1.4 Billion. The DOI funding levels are specific in line-item programs whereas USDA's EQIP is funded under the Farm Bill.

Garrison Diversion Unit

Fiscal Year 2014 Request: \$30.4 Million DOI (Bureau of Reclamation)

The Association strongly supports the request of the Garrison Diversion Conservancy District, the State of North Dakota and the North Dakota Congressional delegation of \$30.4 million for ongoing construction of the Garrison Diversion Unit. The project provides Indian and non-Indian rural and municipal water supply, as well as fish and wildlife mitigation and enhancement and operation and maintenance of existing facilities. The project is compensation to North Dakota for construction of dams on the Missouri River.

Lewis & Clark Regional Water System

Fiscal Year 2014 Request: \$35 Million DOI (Bureau of Reclamation)

Congress authorized the Lewis & Clark Regional Water System in 2000. The three States and 20 local members have pre-paid 100 percent of the non-Federal cost share, a combined \$154 million, demonstrating the strong local and State commitment to the project. Unfortunately, Federal funding the last few years has not even been enough to cover inflation, let alone allow the project to make any significant construction progress. Not including fiscal year 2013 funding, which has not yet been finalized, the Federal Government has paid \$207.5 million toward Lewis & Clark as of November 2012. According to the Bureau of Reclamation, the remaining Federal cost share, which is indexed each year for inflation, was \$200.6 million in 2012. By comparison, the remaining Federal cost share in 2011 was \$194.3 million and in 2010 was \$188.6 million. This demonstrates that under recent funding levels the project will never be completed. Even at \$10 million a year Lewis & Clark's engineers estimate it would take until 2050 to complete the project. The longer it takes to complete Lewis & Clark the more expensive it becomes and the longer it takes to realize the full economic benefits of having access to the critically needed water, which is a terrible disservice to the taxpayers.

Lewis & Clark is currently 65 percent complete and began serving water last July to eleven of the 20 members. With the remaining construction schedule entirely dependent upon Federal funding, there is unfortunately no timeline when the remaining nine members will receive water. The Federal Government needs to honor its commitment to the project and not leave these cities and rural water systems high and dry.

Mni Wiconi Water Supply Project

Fiscal Year 2014 Request: \$13 Million DOI (Bureau of Reclamation)

The Mni Wiconi Project is requesting \$13.0 million in appropriations for operation, maintenance and replacement (OMR) activities in fiscal year 2014. This is the first year without a request for construction funding and assumes that the Bureau of Reclamation will make fiscal year 2013 funds available in amounts necessary to fully allocate the remaining, authorized construction ceiling. OMR funds will be utilized for regional core and distribution systems on the Pine Ridge, Rosebud and Lower Brule Indian Reservations. The OMR budget must be adequate to keep pace with the system that is placed in operation to protect and preserve the \$470 million investment of the United States in project facilities, which are held in trust by the United States with the exception of the West River/Lyman-Jones (non tribal) facilities. fiscal year 2014 is the first year that emphasis has shifted to OMR as the primary budgeting need. Budgeting and funding by the United States to ensure that aging features of the constructed project are protected is not only sensible but properly executes the responsibilities of the United States as trustee to the Indian people. While the budgeting by the Administration was adequate this year, budgeting has not been adequate in several of the past years. The concern is that aging components of critical project facilities will not be properly repaired and replaced due to budget limitations.

Yakima River Basin Enhancement Project Phase II—Yakima Basin Integrated Plan
Fiscal Year 2014 Request: \$45 Million DOI (Bureau of Reclamation)

Authorized under Title XII of Public Law 103-434 the Yakima River Basin Integrated Water Resource Management Plan brings together a diverse group of farmers and ranchers, irrigation districts, county and city governments, the Yakama Nation, conservation organizations environmental groups and State and Federal agencies. The Integrated Plan will create jobs, enhance competitiveness of basin farmers and

strengthen the economy while rebuilding salmon runs, increase recreational opportunities and protect critical resources.

Sunnyside Conservation Program

Fiscal Year 2014 Request: \$3.5 Million DOI (Bureau of Reclamation)

Authorized under Title XII of Public Law 102-434 the Sunnyside Conservation Program is a seven State watershed management and erosion protection program accomplished through conservation and on-farm resources management and is ongoing work done under the Yakima River Water Enhancement Project Act.

Endangered Species Recovery Implementation Program

Fiscal Year 2014 Request: Support President's Budget Request

This program provides funding for Upper Colorado and San Juan endangered fish recovery programs that ensure ESA compliance for 2,500 Federal, tribal, and non-Federal water projects under Federal/non-Federal cost sharing arrangements authorized by Congress under Public Law 106-392.

Fisheries and Aquatic Resources Conservation Activity

National Fish Hatchery Operations Subactivity

Fiscal Year 2014 Request: Support President's Budget Request

This program provides the Federal share of funding from USFWS for the Upper Colorado and San Juan Endangered Fish Recovery Program and ensures ESA compliance for 2,500 water projects.

Resources Management Appropriation Ecological Services Activity

Endangered Species Subactivity—Recovery of Species Element

Fiscal Year 2014 Request: Support President's Budget Request

This program provides the Federal share of funding from USFWS for the Upper Colorado and San Juan Endangered Fish Recovery Program and ensures ESA compliance for 2,500 water projects.

Title XVI Program

Fiscal Year 2014 Request: \$29 Million DOI (Bureau of Reclamation)

Title XVI is a major component of Reclamation's WaterSMART strategy. It provides authority for project sponsors to receive Federal funding on a cost-shared (75 percent non-Federal—25 percent Federal) basis for planning, design, construction and pre-construction activities.

California Bay-Delta Restoration

Fiscal Year 2014 Request: \$39 Million DOI (Bureau of Reclamation)

The California Bay-Delta is the hub of the Nation's largest water delivery system and one of the most important estuary ecosystems in the United States. The Bay-Delta provides drinking water for 25 million people and support agricultural activity which produces 45 percent of the Nation's fruits and vegetables.

Arkansas Valley Conduit

Fiscal Year 2014 Request: \$15 million DOI (Bureau of Reclamation)

Authorized by Public Law 87-590 and supplemented under Public Law 111-11, the purpose of the Arkansas Valley Conduit (AVC) project is to deliver water for municipal and industrial water uses within Southeastern Colorado Water Conservancy District's boundaries. This water supply is needed to supplement or replace existing poor quality water and to help meet the AVC water providers' projected water demands through 2070.

Central City, Trinity River Vision Project, Fort Worth, TX

Fiscal Year 2014 Request: \$41.7 Million (U. S. Army Corps of Engineers)

Flood Control, Ecosystem Enhancement and Environmental Remediation authorized by Public Law 108-447.

NEW PROJECT/PROGRAM STARTS

*Cooperative Environmental Water Transactions Program Development
(EBID 0203-12-036170)*

Fiscal Year 2014 Request: \$70,000 DOI (Fish and Wildlife Service)

*Water Conservation Field Service Program (Irrigation Management System)
Grant 11056012 CFDA # 15.530 Funding No. R12SF40020*

Fiscal Year 2014 Request: \$80,000 DOI (Bureau of Reclamation)

We appreciate the opportunity to present our funding priorities for rural fiscal year 2014 to the Committee and stand prepared to assist the Committee in any manner necessary.

PREPARED STATEMENT OF THE NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This Statement is submitted in support of fiscal year 2014 appropriations for the Colorado River Basin Salinity Control Program (Program) of the Department of the Interior's Bureau of Reclamation (Reclamation). Reclamation serves as the lead Federal agency in implementing the Program. Reclamation primarily institutes salinity control through its Basinwide Program. A total of \$15,400,000 is requested for fiscal year 2014 to implement the authorized salinity control program of the Bureau of Reclamation. Recent years have followed a trend of inadequate funding for the needs of the program. An appropriation of \$15,400,000 for Reclamation's salinity control program is necessary to restore the program to the level needed to protect water quality standards for salinity and to prevent unnecessary levels of economic damage from increased salinity in water delivered to the Lower Basin States of the Colorado River.

STATEMENT

The water quality standards for salinity of the Colorado River must be protected while the Basin States continue to develop their compact apportioned waters of the river. The salinity standards for the Colorado River have been adopted by the seven Basin States and approved by the Environmental Protection Agency. While currently the standards have not been exceeded, salinity control projects must be brought on-line in a timely manner to counter the effects of future development that could result in unnecessary damages from higher levels of salinity in the water delivered to the Lower Basin States of the Colorado River.

The seven Colorado River Basin States, in response to the Clean Water Act of 1972, formed the Colorado River Basin Salinity Control Forum (Forum), a body comprised of gubernatorial representatives from the seven States. The Forum was created to provide for interstate cooperation in response to the Clean Water Act and to provide the States with information necessary to comply with Sections 303(a) and (b) of the Act. The Forum has become the primary means for the Basin States to coordinate with Federal agencies and Congress to support the implementation of the salinity control program for the Colorado River Basin.

The Colorado River Basin Salinity Control Act was authorized by Congress and signed into law in 1974. This authorized the Secretary of the Interior to initiate the Program, and it created the Colorado River Basin Salinity Control Advisory Council representing the seven Basin States. This Federal advisory committee works closely with the Forum.

Colorado River water is used by approximately 40 million people and irrigates approximately 4 million acres in the United States. Bureau of Reclamation studies show that quantified damages from Colorado River salinity to United States water users are about \$376 million per year. Unquantified damages are greater. Reclamation's modeling indicates that the quantifiable damages would increase to \$577 million per year by 2030 if the Program is not continued. Control of salinity is necessary for the States of the Colorado River Basin, including New Mexico, to continue to develop their compact-apportioned waters of the Colorado River.

Timely appropriations for the funding of the salinity control program are essential to comply with the water quality standards for salinity, prevent unnecessary economic damages in the United States, and protect the quality of the water that the United States is obligated to deliver to Mexico. The Basin States and Federal agencies agree that increases in the salinity of the Colorado River will result in significant increases in damages to water users in the Lower Colorado River Basin. Continued strong support and adequate funding of the salinity control program is required to control salinity-related damages in the United States and Mexico.

Congress amended the Colorado River Basin Salinity Control Act in July 1995 (Public Law 104-20), creating Reclamation's Basinwide Program. The Basinwide Program has proven to be cost-effective, and the Basin States are standing ready with up-front cost-sharing. Proposals from public and private sector entities in response to Reclamation's requests for proposals and funding opportunity announcements have far exceeded available funding appropriated in recent years. Basin States cost-sharing funds are available for the \$15.4 million appropriation request

for fiscal year 2014. The Basin States' cost-sharing adds 43 cents for each Federal dollar appropriated.

Public Law 106-459 gave the Bureau of Reclamation additional spending authority for the salinity control program. With the additional authority in place and significant cost-sharing available from the Basin States, it is important that the salinity control program be funded at the level requested by the Forum and Basin States to protect the water quality of the Colorado River. Some of the most cost-effective salinity control opportunities occur when Reclamation improves irrigation delivery systems concurrently with on-farm irrigation improvements undertaken by the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP). The Basin States cost-share funding is available for both on-farm and off-farm improvements. The EQIP funding appears to be adequate to accomplish the on-farm work. Adequate funding for Reclamation's off-farm work is needed to maintain timely implementation and effectiveness of salinity control measures.

I urge the Congress to appropriate \$15.4 million to the Bureau of Reclamation for the Colorado River Basin Salinity Control Program, plus adequate funding for operation and maintenance of existing projects and adequate funding to identify new salinity control opportunities. This investment in water quality will pay for itself many times over. Also, I fully support testimony by the Forum's Executive Director, Don Barnett, in request of this appropriation.

PREPARED STATEMENT OF THE OREGON WATER RESOURCES CONGRESS

The Oregon Water Resources Congress (OWRC) is requesting a minimum level of \$1.5 billion in funding for the Bureau of Reclamation's (Reclamation) Water and Related Resources program. An increase above the proposed fiscal year 2014 Budget for Reclamation's is needed to meet the diverse water supply needs and increasing aging infrastructure needs in the 17 Western States that Reclamation serves. Funding to address water supply challenges provides benefits beyond increasing water availability and upgrading aging infrastructure; it provides jobs and stimulates the local economy, prevents property damage and life loss, paves an avenue for a secure and safe water and food supply, and improves conditions for fish and wildlife.

OWRC represents irrigation districts, water control districts, drainage districts, water improvement districts, and other agricultural water suppliers that deliver water to 1/3 of all irrigated land in Oregon. These local government entities operate complex water management systems, including water supply reservoirs, canals, pipelines, and hydropower production. OWRC has been promoting the protection and use of water rights and the wise stewardship of water resources on behalf of agricultural water suppliers for over 100 years. About one-half of our members are in Reclamation Projects and many of the remaining members have contracts with Reclamation or have been awarded grants under the WaterSMART program.

WaterSMART INITIATIVE

OWRC strongly supports increased funding for the WaterSMART Initiative-Sustain and Manage America's Resources for Tomorrow-a key suite of programs used by Oregon's irrigation districts to support water conservation activities. The combined results of WaterSMART Grants, Water Conservation Field Services Program, Basin studies, and other conservation programs are making progress toward the Department of Interior's goal of conserving 730,000 acre-feet of water by the end of 2013 and increase agricultural, municipal, industrial, and environmental water supply availability in the Western U.S. These programs are an important part of the overall funding package for water conservation projects collaboratively developed by local communities, supported with local and State funding, and designed to meet those communities' unique needs while still meeting the goal of water conservation.

Water Conservation Field Services Program

The Water Conservation Field Services Program (WCFSP) is a key component in supporting irrigation districts' and similar water delivery systems' water conservation efforts. In the past the WCFSP has provided a breadth of technical assistance to irrigation districts and provided partial funding for materials used to pipe and line canals, measurement and other technology, and water conservation plans-all supporting water conservation efforts being implemented by these districts. While we are supportive of exploring innovative ways to utilize reclaimed and reused water, we continue to be concerned about funding a few expensive projects in limited areas while there are large unmet needs in other more established WaterSMART programs, like WCFSP.

We request that a portion of the \$14 million for Title XVI projects should be reallocated to the WCFSP, which will yield more immediate and cost-effective water conservation measures in all 17 Western States.

The planning projects and technical assistance funded under the WCFSP are key components that help our member districts identify opportunities for water conservation through improved water management and capital investments. A lack of funding for the feasibility phase of projects is an impediment to the districts' ability to move forward with implementing water conservation projects like those listed below. This program provides seed money for both short and long term planning by districts and water users that results in helping Oregon meet the competing demands for water in basins throughout the State. Furthermore, technical assistance under this program can help water suppliers plan for and adapt to potential impacts from climate change.

Additionally, we believe the management of the WCFSP should remain with the Regional Offices in order to retain the close connection between Reclamation and Project managers and ensure that Reclamation's resources are used to best support the management of its Projects. The WCFSP is one of the Reclamation services most appreciated by our members. The regional staff, and particularly the local area office staff, understand the unique operating and delivery challenges of the various Projects, and therefore provide very meaningful support to the managers of those Projects.

WaterSMART Grants

WaterSMART cost-share grants have supported Oregon districts' efforts to improve water delivery systems, conserve water, and implement innovative projects to meet the diverse water needs in our State. These projects have been a key ingredient to the districts' efforts to work cooperatively with other stakeholders in their respective river basins to address the in-stream needs and water quality needs of their basins, without reducing the amount of land to which the districts deliver water, and avoiding enforcement actions by Federal or State agencies. There continues to be more applicants than available funding and increased funding is needed to enable local water suppliers to continue their work to conserve water and help meet the Secretary's water conservation goal. With a return of over \$5 for every \$1 of Federal investment, and non-Federal match generally exceeding the required amount, this program far exceeds the results of other partnerships between the Federal Government and local project sponsors.

Examples of Oregon Projects Funded through the WaterSMART Initiative

The following projects are examples of how Reclamation's WaterSMART Initiative is helping Oregon districts. More projects like these could be developed and implemented with additional Federal support through the WaterSMART Program.

—*Central Oregon Irrigation District, Malott Tail Water Recovery Project.*—The Central Oregon Irrigation District will construct a retention system, including installation of an energy efficient pump, to recapture and reuse irrigation, storm, and run-off water to decrease the amount of water deliveries necessary for irrigation. The project is expected to result in water savings of about 398 acre-feet annually, help to improve water quality in the Lower Crooked River, potentially benefitting reintroduced steelhead in that portion of the river. Reclamation Funding: \$18,960 Total Project Cost: \$257,178

—*North Unit Irrigation District, Water and Energy Conservation Initiative Phase II.*—The North Unit Irrigation District will work with the Central Oregon Irrigation District (COID) to pipe one mile to address seepage losses. The project is expected to result in approximately 1,300 acre-feet of water savings annually and through a partnership with the Deschutes River Conservancy, conserved water will be marketed to restore instream flows in the Crooked River. The project will also lead to increased flows through existing turbines, which will enable COID to generate up to an additional 318,638 kilowatt-hours of energy each year and allow approximately 191,178 kilowatt-hours of energy to be saved annually through pumping reductions. Reclamation Funding: \$300,000 (\$600,000 over 2 years) Total Project Cost: \$1,347,935

—*North Unit Irrigation District, Lateral 58-11 Piping Project.*—The North Unit Irrigation District will also pipe two miles of an earthen canal that currently loses a significant amount of water to seepage. The project is expected to result in water savings of approximately 673 acre-feet annually. Conserved water will be used to restore instream flows in the Crooked River. The District estimates that an average 158,155 kilowatt-hours of energy will be saved annually through pumping reductions. Reclamation Funding: \$200,000 (\$942,982 over 3 years) Total Project Cost: \$1,923,447

—*Ochoco Irrigation District, Ochoco Main Canal Multi-purpose Screen and Automation.*—The Ochoco Irrigation District will install a new flume to allow more accurate water measurement, a new gate with automated control, and a multi-purpose screen at the District's main canal diversion near the Ochoco Dam outlet. The project is expected to result in water savings of 2,870 acre-feet annually by reducing seepage and spills and approximately 656,640 kilowatt-hours of energy to be saved annually through reduced pumping of water from the Crooked River. Reclamation Funding: \$146,909 Total Project Cost: \$299,814

—*Owyhee Irrigation District, Lower Owyhee River Rehabilitation Project Phase II.*—The Owyhee Irrigation District will convert 4.5 miles of existing open ditch conveyance to closed pipeline and will also install 20 advanced flow meters and an automated side sweep cleaner to improve the operational efficiency of the delivery system. The project is expected to result in water savings of about 188 acre-feet annually and is expected to facilitate future on-farm improvements by landowners who may take advantage of the pressurized system to convert from furrow irrigation to sprinkler and drip irrigation. Reclamation Funding: \$299,000 Total Project Cost: \$1,161,004

—*Three Sisters Irrigation District, Watson-McKenzie Main Canal Pipeline Project.*—The Three Sisters Irrigation District will pipe 14,000 feet of the Watson-McKenzie Main Canal and will install meters at farm turnouts. The project is expected to result in water savings of approximately 1,850 acre-feet annually which will be dedicated for instream flows through the Deschutes River Conservancy. Additional water in Whychus Creek is expected to improve riparian habitat and benefit Bullhead Trout and Steelhead. The pressurized pipeline resulting from this project will also allow farmers who receive deliveries from the District to implement further improvements. Reclamation Funding: \$750,000 (\$1,500,000 over 3 years) Total Project Cost: \$5,604,981

AMERICA'S GREAT OUTDOORS INITIATIVE & ECOSYSTEM RESTORATION

OWRC is supportive of the “America’s Great Outdoors Initiative,” and increased funding to support collaborative ecosystem restoration efforts that meet Reclamation’s mission. Funding for the Columbia and Snake River Salmon Recovery Project is essential as Reclamation, Bonneville Power Administration, U.S. Army Corps of Engineers, and NOAA Fisheries prepare to meet the requirements of the Federal Columbia River Power System Biological Opinion that provides reasonable and prudent alternatives to mitigate impacts to Columbia-Snake river salmon and steelhead. We strongly encourage Reclamation to consider dedicating funding for fish passage and fish screening projects that can help meet these requirements. This type of funding could be leveraged with State and local efforts to maximize cost effectiveness and environmental benefits. Additionally, funding for the Klamath Project will help support ongoing efforts to improve water supplies to meet the myriad of agricultural and environmental needs that depend upon it. Providing funding for these types of collaborative restoration efforts will lead to implementable, cost-effective water resources solutions that help reduce conflict and expensive litigation.

AGING INFRASTRUCTURE & DAM SAFETY

While we are heartened to see increased funding for the Dam Safety Program, the actual amount available is limited since the bulk of funding will be consumed by the ongoing work at Folsom Dam. OWRC requests additional funding to support necessary improvements and investigations for not only dam safety but to address other aging infrastructure problems in the 17 Western States. Many of the 824 dams and reservoirs that Reclamation manages (and associated delivery systems) were built 50 to 100 years ago and are in dire need of improvement. These improvements are costly and deferred maintenance leads to reduced system efficiency, water conservation, and in some instances catastrophic failure. The need to address aging infrastructure is even more crucial when potential climate change impacts are considered.

BRIDGING THE HEADGATES MOU

The need for continued coordination among Federal agencies is a significant issue. The Bridging the Headgates program established by a MOU between the Natural Resources Conservation Service (NRCS) and Reclamation has proven successful in coordinating their efforts and we support the reauthorization of this program. We made the same request in our testimony on the fiscal year 2014 budget for NRCS which can be referred to for details of this request.

We respectfully request the appropriation of at least \$1.5 billion for Reclamation’s Water and Related Resources program for fiscal year 2014. Furthermore, we recog-

nize the difficult nature of the ongoing Federal budget discussions, but feel it is inappropriate and potentially detrimental to sequester funding for WaterSMART grants when we see how much positive benefits are occurring on the ground, and especially when there are other areas of Interior's budget that are not as proven or helpful in providing economic and environmental benefits. We would be happy to speak with Committee staff further about this issue. Thank you for the opportunity to provide testimony regarding the fiscal year 2014 budget for the U.S Bureau of Reclamation's WaterSMART Program.

PREPARED STATEMENT OF THE SOUTHERN NEVADA WATER AUTHORITY (SNWA) AND
THE COLORADO RIVER COMMISSION OF NEVADA (CRCN)

Waters from the Colorado River are utilized by approximately 40 million people for municipal and industrial purposes and are used to irrigate approximately four million acres in the United States. Natural and man-induced salt loading of the Colorado River creates environmental and economic damages. The U.S. Bureau of Reclamation (Reclamation) has estimated the current quantifiable damages at about \$376 million per year. Congress authorized the Colorado River Basin Salinity Control Program (Program) in 1974 to offset increased damages caused by continued development and use of the waters of the Colorado River. Modeling by Reclamation indicates that the quantifiable damages would rise to approximately \$577 million per year by 2030 without continuation of the Program. Congress directed the Secretary of the Interior to implement a comprehensive program for minimizing salt contributions to the Colorado River. Reclamation serves as the lead Federal agency in implementing the Program. Reclamation primarily institutes salinity control through its Basinwide Program. Funding levels have fallen behind in recent years, and a funding level of \$15.4 million is required in fiscal year 2014 to prevent further degradation of the quality of the Colorado River and increased downstream economic damages.

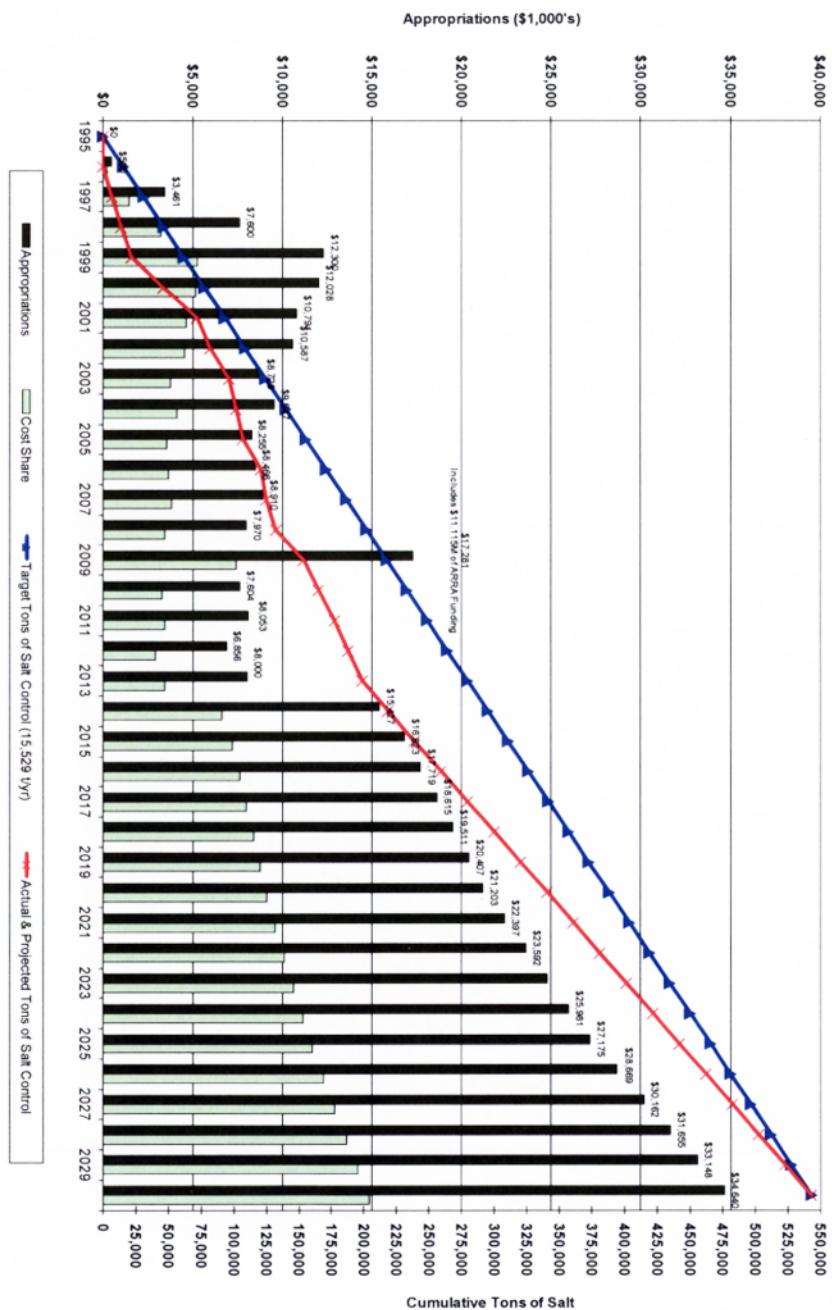
The Environmental Protection Agency (EPA) has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. The majority of land within the Colorado River Basin is federally owned and administered. In implementing the Colorado River Basin Salinity Control Act (Act) in 1974, Congress recognized that most of the salt load in the Colorado River originates from federally owned lands. Title I of the Act deals with the United States' commitment to the quality of waters being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to users within the United States. This testimony deals specifically with the Title II efforts.

In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act and created Reclamation's Basinwide Program. Under the Basinwide Program, Reclamation funds competitive proposals which will decrease the salt load of the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. It is more efficient for Reclamation to perform the off-farm distribution system improvements prior to the United States Department of Agriculture Natural Resources Conservation Service (NRCS) treating the on-farm acres with salinity control practices (i.e., Reclamation should pipe a canal or lateral prior to NRCS installing a pressurized sprinkler system on the farm). Shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The funding amounts identified above and in the graph on the previous page are required to get the Basinwide Program back on pace with the overall Program implementation needs.

Concentration of salt in the Colorado River causes approximately \$376 million in quantified damages and significantly more in immeasurable damages in the United States and results in poor water quality for United States users. Damages occur from:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector;
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal sector;
- a reduction in the useful life of water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector;

Basinwide Program: Controlling 20,286 tons salt/per year
 Beginning Fiscal Year 2014



- an increase in the cost of cooling operations and the cost of water softening, and a decrease in equipment service life in the commercial sector;
- an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector;
- a decrease in the life of treatment facilities and pipelines in the utility sector; and
- difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins.

The Colorado River Basin Salinity Control Forum (Forum) is composed of gubernatorial appointees from the Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming). The Forum is charged with reviewing the Colorado River's water quality standards for salinity every 3 years. In so doing, it adopts a Plan of Implementation consistent with these standards. The Plan of Implementation, as adopted by the Basin States and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030 or approximately 20,000 tons of new control each year. Based on current cost levels, Reclamation's funding under its Basinwide Program needs to be \$15.4 million in fiscal year 2014. The level of appropriation requested in this testimony is in keeping with the adopted Plan of Implementation. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

The graph on the previous page shows the historic funding levels for Reclamation's Basinwide Program from formation through fiscal year 2013 and needed funding levels for fiscal year 2014 through fiscal year 2030. The black bars indicate the appropriated amount and the green bars indicate the commensurate cost share. The blue line designates the initial target of salinity control while the red line specifies the actual control up through fiscal year 2013 and the required control from fiscal year 2014 through fiscal year 2030.

In summary, implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River and is an essential component to the overall Colorado River Basin Salinity Control Program. Continuation of adequate funding levels for salinity within this program will prevent further degradation of the water quality of the Colorado River and will also prevent significant increases in economic damages to municipal, industrial and irrigation users. A modest investment in source control pays huge dividends in improved drinking water quality to nearly 40 million Americans.

PREPARED STATEMENT OF THE SOUTHERN NEVADA WATER AUTHORITY (SNWA) AND
THE COLORADO RIVER COMMISSION OF NEVADA (CRCN)

SUPPORT LETTER

To: The Honorable DIANNE FEINSTEIN
*Chairwoman, Subcommittee on Energy and Water Development
 Committee on Appropriations
 United States Senate*

Subject: Continued Funding for the Colorado River Basin Salinity Control Program under the Bureau of Reclamation's Basinwide Program

From: Patricia Mulroy, General Manager, Southern Nevada Water Authority
 Jayne Harkins, P.E., Executive Director, Colorado River Commission of Nevada

Date: May 1, 2013

As Congress continues work on the fiscal year 2014 budget, we urge you to support as a priority the continued funding for the Colorado River Basin Salinity Control Program (Program) under the U.S. Bureau of Reclamation's (Reclamation) Basinwide Program (Basinwide Program). This includes fiscal year 2014 Federal funding of \$15.4 million for salinity-specific projects to prevent further degradation of the quality of the Colorado River and increased economic damages within the Lower Basin.

Salinity concentrations of Colorado River water are lower by more than 100 milligrams per liter (mg/L) since the initiation of the Program. The concentrations of salts in the Colorado River cause approximately \$376 million in quantified damages in the Lower Basin each year and significantly more immeasurable damages. Modeling by Reclamation indicates that quantifiable damages will rise to approximately \$577 million per year by 2030 without the Program's continuation.

Colorado River water salinity increases from about 50 mg/L at its headwaters to more than 700 mg/L in the Lower Basin. High salt levels in the water cause significant economic damages downstream. For example, damages occur from:

- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal sector;
- a reduction in the useful life of water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector;
- an increase in the cost of cooling operations and the cost of water softening, and a decrease in equipment service life in the commercial sector;
- an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector;
- a decrease in the life of treatment facilities and pipelines in the utility sector;
- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector; and
- difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins.

The Program reduces salinity by preventing salts from dissolving and mixing with the Colorado River's flow. The Program benefits Colorado River water users in both the Upper Basin through more efficient water management, and the Lower Basin through reduced salinity concentration of Colorado River water.

To deal with salinity level concerns, the Colorado River Basin Salinity Control Act (Act) was signed into law in 1974. The Act provides for the Secretary of the Interior to develop a comprehensive program for minimizing salt contributions to the Colorado River from lands administered by the Bureau of Land Management. Geological conditions and past management practices have led to human-induced and accelerated erosion processes from which soil and rocks, heavily laden with salt, are deposited in various stream beds or flood plains. As a result, salts are dissolved into the Colorado River system causing water quality problems for Lower Basin water users.

The Program has proven to be a very cost effective approach to help mitigate increased salinity impacts on the Colorado River. Continued Federal funding of this Basinwide Program is essential to the Southern Nevada Water Authority and the Colorado River Commission of Nevada.

Again, we urge you to support continued funding of \$15.4 million for the Colorado River Basin Salinity Control Program under the Bureau of Reclamation's Basinwide Program for fiscal year 2014 to prevent further degradation of Colorado River water and increased Lower Basin economic damages, and to provide improved drinking water quality to nearly 40 million Americans.

PREPARED STATEMENT OF THE STANDING ROCK SIOUX TRIBE

On behalf of the Standing Rock Sioux Tribe, I would like to express our appreciation to this subcommittee for the opportunity to provide testimony concerning fiscal year 2014 Energy and Water Development Appropriations. I would like to focus my comments on the funding needs of the Standing Rock Sioux Tribe's Municipal, Rural, and Industrial (MR&I) Water System and the Standing Rock Irrigation Project.

BACKGROUND

The Standing Rock Indian Reservation encompasses 2.3 million acres and comprises all of Sioux County, North Dakota and all of Corson County, South Dakota. The Reservation's land base is approximately the size of the State of Connecticut; it is larger than the States of Rhode Island and Delaware combined. The Reservation is the sixth largest land area in the BIA system. The Reservation's population—approximately 8,500 Tribal members and 2,000 non-members—resides in 17 communities throughout Tribe's eight districts. The people residing on the Reservation share a need for safe, clean drinking water and irrigation for sustainable living.

The Sioux inhabited the Great Plains long before the Lewis and Clark expedition, relying upon the waters of the Missouri River and its tributaries. The bottomlands

of the rivers and streams provided nutrient-rich soil for ranching and farming, as well as a homeland for our people.

The 1944 Flood Control Act laid the groundwork for the Pick-Sloan program. Under the Pick-Sloan program, six main stem dams were built along the Missouri River. The six reservoirs established by these dams—i.e. the Missouri River Basin Mainstem Reservoir System—constitute the largest reservoir system in North America. Although the Pick-Sloan program was approved to promote the general economic development of the United States, it destroyed more Indian land than any other public works project in the history of the United States.

Approximately, 55,993 acres of land on the Standing Rock Indian Reservation were inundated by the establishment of the Oahe Reservoir. This inundation destroyed some of the Reservation's most valuable rangelands, most of Reservation's gardens and cultivated farm tracts, and nearly all of the Reservation's timber, wild fruit, and wildlife resources. Large segments of the Reservation's population—including four tribal communities—were ultimately forced to relocate, resulting in the loss of economic infrastructure—including roads, hospitals, and homes—and causing severe social dislocation. The Tribe suffered catastrophic personal and economic losses, unemployment soared, and life on the Reservation has never been the same.

MR&I WATER SYSTEM

Decades later, in an effort to make the Tribes whole, the United States promised, among other things, to build safe, treated potable water systems for our Reservation, which are essential to revitalize economic growth and public health. The Tribe expects the establishment of safe drinking water systems to serve all of the people living on the Reservation will substantially improve our people's health. Currently, many Reservation families must still clean dishes—and bathe themselves and their small children—in brown well water that contains heavy minerals like manganese and iron, and is high in sulfates.

Through legislation such as the Garrison Diversion Unit Reformulation Act of 1986 and the Dakota Water Resources Act of 2000, Congress authorized substantial funding for drinking water projects. The Standing Rock Sioux Tribe's Municipal, Rural, and Industrial (MR&I) Water System was authorized to receive \$80 million from the Dakota Water Resources Act, an amount which, through cost indexing, is today equivalent to \$145.425 million. To date, approximately \$58.850 million has been expended. The approximate remaining project ceiling is \$86.575 million.

From 2001 to 2007, the Standing Rock Sioux Tribe received between 1.2 and 2.4 million dollars per year for its MR&I projects. Practically speaking, this only allowed for the Tribe to put together small bid packages for various phases of these projects. This piecemeal approach necessarily increased both the transaction and overall costs of developing these important water projects.

Because of larger appropriations in 2008, including American Recovery and Reinvestment Act funds, substantial progress has been made on the Tribe's water projects. For example, construction is nearly complete for core facilities including a deep water intake and pump station, 13 miles of raw water transmission pipeline, a main storage reservoir, and 49 miles of main transmission treated water pipelines.

In 2009, the Standing Rock Sioux Tribe received \$19 million in ARRA funding for a state-of-the-art water treatment plant at Wakpala, South Dakota, which is now complete. In addition to providing treated drinking water to over 1,100 households and many small businesses in at least 8 different communities, this project created over 40 full-time construction and support jobs, which resulted in much needed economic development for the area.

Prior to fiscal year 2013, Dakota Water Resources Act funding was split evenly between the State and the Tribes (i.e. 50 percent to the States and 50 percent to the Tribes); and Standing Rock received 40 percent of the tribal funding (i.e. 20 percent of the total funding). However, beginning in fiscal year 2013, the Bureau of Reclamation began using a different allocation method, where the funding split is no longer determined by a percentage-based method, but based on which projects the Bureau of Reclamation determines to be priorities—which results in one or two projects receiving the majority of appropriation and the other projects receiving significantly less.

The Standing Rock MR&I project still has over \$86.578 million in remaining authorization—funding essential to complete work on pump stations, storage tanks, and pipelines, so that treated, clean, safe water can be distributed to all our communities, and to rural areas.

Recently, however, appropriations have reverted back to pre-2008 levels, and there is a long way to go before the Tribe's clean water needs are met. Further pipeline construction, including to a significant portion of the Reservation's residents

without access to safe, clean drinking water, is in jeopardy. Standing Rock's fiscal year 2013 appropriation of \$830,000 was below the required \$2,164,450 needed for the project to keep pace with construction cost indexing.

If funding appropriations continue at this level, the project will never be completed and the full value of the over \$58,847,000 invested to date will never be realized. In fact, it will require annual appropriations of approximately \$27 Million to complete all of the authorized Dakota Water Resources Act of 2000 projects in 20 years, \$34 Million to compete them in 15 years, \$48 Million to compete them in 10 years or \$90 Million to complete them in 5 years.

Today, the Reservation's population is growing at a faster rate than neighboring communities. 2010 U.S. Census figures show that the American Indian population is growing three-times the rate of the non-Indian population. This growth demonstrates that the Reservation's need for safe, clean drinking water will only grow in the future.

Over the next 3 years, the Tribe's goal is to provide a permanent water supply to as many residents on the Reservation as possible. Specifically, the Tribe hopes to complete construction of final Main Transmission Pipelines connecting the newly constructed core facilities to existing North Dakota and South Dakota systems and major communities, to connect as many additional users currently without service as possible, and to construct the Selfridge Service Area, including a transmission pipeline to serve residents of Selfridge, North Dakota and other users in the service area, and to construct the McLaughlin Pump Station. When the three year plan is completed, over 75 percent of the Reservation population will receive high quality Missouri River surface water from the Standing Rock's new Indian Memorial Intake and Water Treatment Plant. In order to meet this goal, the Tribe respectfully requests this subcommittee to reinstate the \$52 million Dakota Water Resources Act funding levels from prior years (i.e. 2008 to 2010), under which the Tribe received \$10 million per year.

IRRIGATION

The Tribe has been engaged in the construction of the 2,380 Standing Rock Irrigation Project. The Garrison Reformulation Act (100 Stat. 421) and Three Affiliated Tribes and Standing Rock Sioux Tribe Equitable Compensation Act (106 Stat. 4733) established the funding level for this project at \$12,566 million. The Consolidated Appropriations Act of 2008 authorized an additional \$8 million. (121 Stat. 1955). The 26-year implementation of this project has been marked by the following factors that have diverted funding from completion:

1. The authorized funding of \$20.566 million has diminished in value due to 26 years of inflation;
2. The Bureau of Reclamation used \$507,000 of Standing Rock Irrigation Project funding for planning activities on the Fort Berthold Indian Reservation;
3. The new Cannonball Unit intake was replaced in its first year of operation at a cost of \$1,000,000. The intake was inundated by 11 feet of sediment when the United States Corps of Engineers lowered water levels in Lake Oahe to supply downstream uses.
4. The existing Eagle Unite intake in the Grand River arm of Lake Oahe requires replacement at a cost \$5.1 million to gain access to Lake Oahe during low water levels.

The Tribe requests this subcommittee to appropriate the remaining \$3.12 million for the Standing Rock Irrigation Project to complete the spending of the authorized construction funding and to designate the funds separately from the general appropriation for the Garrison Diversion Unit. Without designation of funds for irrigation, the priority among Garrison entities to fund drinking water systems, which we support, precludes the use of funding to complete the Standing Rock Irrigation Project.

CONCLUSION

On behalf of the Standing Rock Sioux Tribe, I request your continued support of clean, safe, drinking water for our people, and I urge Congress restore funding the Dakota Water Resources Act to fiscal year 2008 and fiscal year 2010 levels to allow completion of critical MR&I projects within a reasonable time. Further, I request the subcommittee to appropriate \$3.12 million for the Standing Rock Irrigation Project in fiscal year 2014. Thank you for your consideration of these very important matters.